# EXPERIMENTS
# IN
# AGRICULTURE,

Made under the DIRECTION of

The RIGHT HONOURABLE and
HONOURABLE

# DUBLIN SOCIETY,

In the Year 1764.

And now Publiſhed at Their Requeſt.

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By MR. JOHN WYNN BAKER.

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*DUBLIN:*

Printed by S. POWELL and SON,
for the AUTHOR.

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*Parliament-Street*, and the Printers hereof.

MDCCLXV.

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The Reader is requeſted to make the following Corrections:

Line the 1ſt for 1763, read 1764. Page 16, Line the 4th, for *Shank*, read Shanks. Page 31, Line the 9th for *Cows*, read Ewes. Page 64, Line 15, after *March*, add, with great Succeſs. Once on the 7th of *March*. Page 147, Line 22, after the Word *The*, add, 5th Vol. of the. Page 149, Line 11, for *Socleté*, read Societé.

TO

The RIGHT HONOURABLE and
HONOURABLE

DUBLIN SOCIETY,

This Report of EXPERIMENTS
in HUSBANDRY

IS GRATEFULLY INSCRIBED,

By their moſt Obliged,

And moſt Devoted,

Humble Servant,

JOHN WYNN BAKER.

*Laughlinſtown,*
*Feb.* 1765.

BRITISH MUSEUM
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# PREFACE.

THE Reader will not, it is hoped, expect to find in the following Sheets, a *Syſtem* of Agriculture. The Title-Page forbids ſuch an Expectation. To form a complete Work of that Kind, would be ample Employment for a Man's *whole Life:* What is here laid before the Publick, is only an Account of ſome few Experiments, made in the Courſe of *one Year.*

IN the Year 1762, I publiſhed an Anonymous Pamphlet, addreſſed to the *Dublin Society*, intitled "Hints upon Huſbandry," therein propoſing to their Conſideration, a Plan for the Improvement of Agriculture.—Upon the Invitation, and Encouragement, of ſome Gentlemen, who knew me to be the Author of that little Piece, I, in the Year 1763, took the Farm which I at preſent Occupy; and in the Month of *January*, 1764, printed a ſhort Sketch of ſuch Part of my former Plan, as I conceived, would lay the beſt Foundation for the general Improvement of Tillage in this Kingdom; and which, therefore, I was determined to carry into immediate Execution.—The *Dublin Society*, always attentive to every thing which *appears* to tend, in any degree, to the Advantage of the Publick, did me the Honour, to adopt me and my Plan, and to aſſiſt me with their Patronage, and Encouragement.—Accordingly I proceeded, with grateful Alacrity, to make the Experiments recommended to me by the *Society*; and, in convenient Time, laid before them my Report of the Proceſs, and Reſult of thoſe Experiments. I had the Happineſs to obtain their Approbation; and was honoured with their further Commands, to proceed in making Experiments in ſuch Articles of Huſbandry, as I ſhould conceive would be moſt conducive to the Advantage of the Kingdom. They had the Goodneſs alſo to aid my Endeavours for the publick Service, by voting me the further Sum of Two Hundred Pounds.—To requeſt that I would publiſh my

Report, and to Order 500 Copies to be taken for the Uſe of the Society.—— Under this reſpectable Sanction, the Author of this little Performance flatters himſelf, that it will not be entirely uſeleſs to the World: And, if his humble Attempts ſhall be, in any degree, ſerviceable to Mankind, his Ambition will be highly gratified.

For the fuller Explanation of the Undertaking, I here inſert a ſhort Abſtract of the Plan which I publiſhed in the Year, 1764.

### Abſtract of the Plan.

" Every Year a Set of Experiments
" will be made in actual Cultivation, not
" only of ſuch Plants as are already
" known to the Practice of the Farmer,
" but of ſuch other as may be thought
" worthy of his Attention.

" These Experiments will be executed
" under various Methods of Culture,
" with, and without, different Species
" of Manure on the ſame Ground.

" IN theſe Experiments, due regard " will always be had to the different " Species of the ſame Plant, by which, " the moſt Profitable will be diſcovered.

" SOME Experiments will be made as " ſoon as may be, for the Improvement " of Meadows, and for deſtroying Moſs, " which ſo much abounds in this King- " dom.

" FEEDING the Farmers Animal Stock, " particularly Sheep, will in due Time, " come under Conſideration; as it is " apprehended they may be maintained, " at a much leſs Expence, than hath " hitherto been practiſed.

" UPON every Experiment, Obſerva- " tions will be made at proper Periods; " their *Treatment*, *Progreſs*, *Succeſs* and " *Produce*, will be communicated to the " Publick, with proper Comments upon " them. And contrary to the Methods " hitherto practiſed, by moſt of the " Writers on Huſbandry, a regular

" Account will be kept of the Expence " attending the Methods of Cultivation, " which ſhall be hereafter recommended " to the Practice of the Publick, in " Conſequence of this Undertaking; with " an eaſy Method of keeping thoſe " Accounts, (be the Scope of Buſineſs " ever ſo large) with Preciſion and Exact- " neſs; in which a Man cannot err, " without detecting his Miſtake daily; " which, heretofore, have been found con- " fuſed, and troubleſome to accompliſh.

" EVERY Encourager of this Under- " taking, will have a right to View " the Plants during their Growth, and " alſo to ſend his Workmen, Tenants, " or other Perſons, to View them in " proper Seaſons; and who will always " be inſtructed in the Cultivation of any " Species of Plant, they may be inclined " to propagate, by printed Directions; " with which they will be furniſhed, at " as moderate a Price, as the Nature of " the Subject will admit of: But all " Subſcribers will receive thoſe Inſtruc- " tions *Gratis*, either by applying Per-

"ſonally, or by Letter; and publick "Notice will always be given of the "proper Seaſons for Exhibition.

"The Inſtruments uſed in Sowing, "and the different Operations in Cultivation, will be ſhewn to ſuch Perſons "as may deſire to ſee them, and their "Uſes explained; but no Time will be "ſo proper to ſee them, as when in "actual Uſe, which will convey more "to any Workman, than can poſſibly "be conveyed to him by Words.

"Every Gentleman who ſhall become "a Patron of this Undertaking, is to "pay Two Guineas, Annually, during "Pleaſure."

I cannot omit to repeat my Solicitations to every Friend of Huſbandry, that they will aid in collecting every Species of Grain and Plant, which may be rendered uſeful to the Farmer. Any, and every Favour I may receive in that Way, I ſhall gratefully Acknowledge. *Smyrna Wheat*, mentioned by Mr. *Tull*, I wiſh to obtain, as well as the *ſix Rowed Wheat.*—The *many Eared Wheat*, cultivated in *Italy*. The *Anjou Cabbage* I have heard extraordinary Accounts of, but have not yet obtained the Seed.

If the Reader ſhall think, that, in what I have ſaid, with reſpect to Mr. *Rocque's* Culture of *Lucerne*, I have expreſſed myſelf too warmly, I beg he may conſider the Terms in which the Advocate for that Culture, had impeached the Judgment of the beſt Writers on Huſbandry; whoſe unwearied Application, and ingenuous Relations, ſhould have ſecured to them a far different Treatment: The World is ſurely much indebted to a *Tull*, a *Duhamel*, a *Chateau-vieux*, a *Turbelly*, &c. whoſe Memories will ever deſerve the moſt honourable Reſpect. At the ſame Time, I with *Pleaſure* admit, that the Publick is greatly obliged to Mr. *Rocque*, for having introduced a more extenſive Cultivation of *Burnet*, with a View to the important Purpoſe of affording *Winter Paſture* for Cattle: And from the little Experience I have yet had of it, I cannot but recommend it to the cloſeſt Attention of the Farmer.

The Plant, which I have introduced under the Title of *Turnep-Cabbage*, has been raiſed in ſome *Gardens* for the Uſe of the Table, and even in that Reſpect it merits Attention; but I believe I was the firſt Perſon by whom it was cultivated in the *Field*. The Plant is ſo grateful to the fair Cultivator of it, and my Succeſs has accordingly been ſuch, that I cannot ſufficiently recommend it; and I live in hope to ſee it growing upon every Farm. Such Gentlemen, as have it in their Power to make the Experiment, will, I hope, not be unmindful, of the Benefit which may be expected from it to the Navy. Whoever ſhall bring it effectually to anſwer that Purpoſe, will render a Service to the Publick, for which our lateſt Poſterity, as well as the preſent Age, will have abundant Reaſon to be thankful.

The Papers which I have introduced relative to the Cure of Cattle ſwelled by eating *Clover*, will, I hope, be of that Service to the Publick which I intended, by originally ſetting the Enquiry on Foot; which Opportunity was afforded me, by the *Muſeum Ruſticum*: A Work which puts it in every Man's Power to communicate his Diſcoveries to the Publick, without the diſagreeable Buſineſs of attending the Preſs; and the many Anſwers with which Gentlemen favoured my Enquiry, ſhews the Utility of that Undertaking.—Excluſive of the Conſideration of the Loſs ariſing to every Man, whoſe Cattle fall into that Diſorder, it muſt ſurely be a melancholy Object, to every *humane* Man, to ſee a poor Animal undergoing a moſt painful Death, without Relief. Relief, it appears, may be eaſily applied; and if what I have been Inſtrumental in having made Publick, ſhall contribute to the Removal of ſo common a Calamity, it will afford no leſs Pleaſure to me, than it muſt to the Gentlemen who were ſo kind as to Anſwer my Enquiry, to whom I cannot omit to make my thankful Acknowledgments.

The Tables ſhewing, at one View, the State of the Wind and Weather, throughout the Courſe of one entire Year, will, themſelves, it is apprehended, ſufficiently explain the Uſe for which they were intended.

It ſeems to be a diſputed Point, whether Rain falls more frequently in *England*, or in *Ireland*; and I ſhould therefore be very happy, if ſome Gentleman in *England*, who is concerned in Huſbandry, as ſuch a one, would more ſenſibly feel the Uſe of the Enquiry, would keep the like Account of the Wind and Weather, that we might Monthly tranſmit to each other, the State of it, in each Kingdom.

If the Lovers of rural Induſtry ſhall find any thing, in the Account of my Experiments, which may induce them to adopt the Methods of Culture which I practice, I ſhall have Pleaſure in hearing of their good Succeſs. Whatever further Information may be required, I ſhall readily Communicate to every Gentleman, or Farmer, who ſhall apply to me for it, as it will ever be my greateſt Happineſs to render any Service to a Country, to which I eſteem it an Honour to be indebted for very many, and very great Obligations.

I cannot conclude this Preface, without repeating the grateful Senſe which I ſhall ever retain of the Countenance and Patronage with which the *Dublin Society* has favoured me; and alſo making my reſpectful Acknowledgments to thoſe Gentlemen, who have been private Encouragers of my Undertaking.

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## ADVERTISEMENTS.

AT the Requeſt of ſeveral Gentlemen, I purpoſe to raiſe as many different Kinds of Seeds as the Seaſons, and as the Nature of my Soil, will permit me. I have already raiſed Seed from the *Red Turnep*, the white *Tankard Turnep*, the *Turnep-Cabbage*, and *Borecole.*

By Permiſſion of the *Dublin Society*; theſe Seeds will be Sold at their Houſe in *Dublin*, by Mr. *Patrick Bryan*, Collector to the *Society:* They will alſo be Sold at my Houſe in the Country, and *in no other Place.*

Under the Patronage and Encouragement of the *Dublin Society*, I have eſtabliſhed a Manufactory for making all Kinds of Inſtruments, for the Drill and Common Huſbandry: And, as I have engaged proper Artificers for that Purpoſe; Gentlemen and Farmers, may depend on being ſupplied with ſuch as are *well executed* in every Particular. Waggons and Carts, of *all Kinds* may alſo be had, executed in the *Engliſh* Manner.

The Inſtruments for the *Drill* Huſbandry, will be made in the ſame Manner as thoſe which I uſe myſelf, and thoſe for the common Huſbandry, will be conſtructed in the moſt advantageous Manner for the *Diſpatch* of Buſineſs, and the *Eaſe of Cattle.*

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# EXPERIMENTS IN AGRICULTURE, &c.

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On the 5th Day of *April* 1763, the Right Honourable and Honourable DUBLIN SOCIETY, made the following Order, *viz.*

“ THAT the Sum of One Hun-
“ dred Pounds be paid to Mr.
“ *Baker*, to defray his Expences,
“ and as a Recompence for the Trouble
“ he ſhall be at, in making Experiments
“ in the Culture of *Turneps*, *Cabbage*,
“ *Cabbage Turneps*, *Spring Wheat*, *Common*
“ *Wheat*, and *Barley*, and in ſuch other

“ Articles of Huſbandry, as ſhall be recommended by the Society; Mr. *Baker* reporting the Effects of his Experiments, at the proper Seaſons.

No other Experiments having been recommended by the Society, I proceeded to make thoſe named in the above Order, with an Addition of ſome few other, which I thought might be agreeable to the Society; as alſo, on the feeding Cattle upon *Artificial* Paſture.

HERE follows the Proceſs, and Effect, of each Experiment.

IN the Month of *March* 1763, two Acres of Ground, very highly manured with Dung, were planted with *Potatoes*, in the *manner uſually practiced* in this Kingdom, with Spade and Shovel; in the beginning of *November* following the Potatoes were dug. The Land being *low*, and the Winter *very wet*, it could not be plowed ’till the Beginning of *March*, 1764; when, it ſhould be obſerved, the under *Stratum*, upon which the Dung

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and Potatoes lay, roſe at the Plowing as *Stubborn and Strong*, as if no part of the Ground had been tilled before: which proves the *Potatoe Tillage, in the manner in which it is uſually practiced,* not to be ſo beneficial to Land as is generally imagined: the Fact being, that only about *thirty Inches* in every nine Feet of the Ground is tilled at all. *

In the Night of the 10th, and on the 11th and 12th, of *May* following, there was very fine Rain; this Rain enabled me, on the 12th, to reduce this Stubborn Ground pretty fine by the *Harrow.*

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* The Dung for *Potatoes* is *generally* laid in Beds of ſix Feet and an half, or, at moſt, ſeven Feet, Width, upon the Surface of the Ground, without any preceding Preparation; upon this Dung and *Solid* Ground are the Seed Potatoes laid, and then a deep Trench, of about thirty Inches Width, is dug, in order to cover the Ridge where the Dung and Seed are firſt laid. This is an injudicious Practice; the Dung too often draining into the Trenches; and, when the Potatoes are dug, the pulverized Earth is returned into the Trench. The Land ſhould at leaſt be once plowed, before the Dung is laid on. But there are ſtill better Methods practiced in *ſome* Places, of which I ſhall give an Account at ſome future Day.

In the Month of *March* 1763, the other Part of this Field was broke for Fallow; (an improper Time to break Fallows; but, my Entrance upon the Farm in that Month was the Cauſe.) In *June* following it was croſs-plowed, which brought it into very large Lumps; from the Poſition this Plowing threw them into, they were expoſed, in a greater Number of Points, to the Influence of the Weather, than the Ground would have been, had the ſecond Plowing been in the ſame Direction as the firſt.

In this Situation I left this *Fallow* till the *March* following; when, it was plowed for the *third time*, with the Potatoe Ground, in the ſame Direction as at firſt; by this *third* Plowing this Land was brought into an *exceeding fine Tilth.*

This Benefit aroſe from the Ground *not* having been *Harrowed at all.* This is ſomething contrary to the common Mode of Culture; but, was adapted to the *Species of Ground* I had to work upon: Which I ſhall deſcribe hereafter. See the Index, Title *Quality* of the Land.

What the *Harrow* would have done in *part* towards reducing it after the *ſecond* Plowing, was *completely* effected by the Influence of the Summer and Winter; the firſt deſtroyed all the Weeds and Couch-Graſs; (with the latter of which the Ground abounded) and the Lumps exfoliating by the Operation of the Winter, by Degrees fell into *fine Mold*; whereas, had it been *Harrowed* before the Winter, the Rains would have run the ſmaller Particles together, ſo as to have given a great Adheſion to the Ground before the Spring; abſtracted from the like Miſchief, which the *Cattle* would have done by drawing the Harrow. In the Beginning of *June*, I plowed *this* Part of the Field a *fourth* Time, and the Potatoe Ground a *ſecond*; by which Plowing I laid the whole Field into Ridges of five feet Width, except about half an Acre, which I reſerved for other Purpoſes, as will appear hereafter.

In this Field I had two Parcels of Manure ready prepared for it. One conſiſted of Earth raiſed from the Head-Land, mixed with Lime, which lay about twelve Months, having been in that Time *twice* turned.

The other Parcel conſiſted of the *like Earth*, and *Lime*, mixed in the ſame manner, after which I mixed *Dung* with it, *Stratum ſuper Stratum*, which lay about two Months, when I turned it: After which it lay about two Months longer: By this ſtirring the Ingredients, of which this Parcel was compoſed, were perfectly incorporated with each other; and a new Putrefactive Fermentation was excited in it; which perfectly prepared it for the Land: And all the Earth was ſo fully impregnated with the Juices of the Dung, that it was very little, if any thing, inferior to the Dung: Whereas, when Dung lies by itſelf, great part of the *Volatile* Saline Particles are loſt, as ſoon as the Fermentation begins; ſome fly off in Vapours, and others run off with the Juices of the Dung and Rain, which fall upon it.

When I have mixed Dung and Earth, in the manner already deſcribed, I always once, or twice when the Seaſon affords it, cover the *Compoſt* with a large Quantity of *Snow*, or *Ice*; which, upon diſſolving in its paſſage through the Whole, cauſes the Earth to be finely impregnated by the Dung. Snow, by being gathered with Shovels, or rolled together in Balls, is longer diſſolving than Ice, and therefore I prefer it, unleſs it be Ice of Water which happens to be the *Soakage* of a *Dung-Yard*, ſuch Ice being always replete with Food for Vegetables.

The Land being now, in *June*, in five feet Ridges, in the manner already deſcribed, I began to draw out my *Compoſt*; which I diſpoſed in the following manner: I drove the Carrs up every alternate Ridge, and upon each of them dropped the Compoſt, 'till I had manured about three Acres of the Fallow Ground; then, with Shovels, I divided this Manure, as equally as could be, in every Furrow; which was readily done, from the convenient Manner in which it was depoſited.

In the ſame manner I put out the *other* Parcel of Manure (which, it may be remembered, I before ſaid conſiſted of Lime, and Earth) upon about an Acre and an half of the Potatoe Ground; and on a *part of the Fallow Ground*, where *no* Compoſt, or other Manure, had been put; and ſpread it in the ſame manner as the former.

The whole Field being thus manured I plowed it *again*, which was the *fifth* Plowing of the Fallow, and *third* of the Potatoe Ground: by this Plowing I altered the Poſition of every Ridge, by laying the Middle of each exactly over the Manure; conſequently the Furrows were made, where the Middle of the Ridges was before.

The half Acre before mentioned I manured with at leaſt *Double* the Proportion of *Compoſt*, which was allowed to the other part of the Fallow; as it was flat, and it was neceſſary to manure every part of it, being intended for *Turneps*, to be ſown in the *promiſcuous* way.

To this Piece of Ground I gave a *Sixth* Plowing; as it could not have the Benefit of the *Horſe-Hoe*, when Cropped, and therefore I thought it neceſſary to reduce it as *fine* as poſſible; in order to give the *Broad-Caſt* Crop of Turneps every Advantage I could.

The Field being prepared in the manner already deſcribed, I proceeded to *Crop* the Land in the following Order.

*July* the *ſixth* and *ſeventh*, I planted one Row of *Cabbage Plants*, upon the Middle of every Ridge, of about an Acre of the *Fallow* Ground, the Plants in the

Rows two Feet from each other. In like Manner I planted about half an Acre with *Turnep-Cabbage* Plants.

Hence it may be obſerved, that the Plants were in Rows *five Feet* aſunder, and *two Feet* aſunder in the Rows.

This Buſineſs ought to have been done, at leaſt, *a Month* ſooner; but I could not get the Ground ready in due time; however, the Succeſs of *theſe* Crops may encourage others not to give up their Expectations, altho' they may happen to be as late as I was, which muſt frequently happen in a Courſe of Buſineſs; tho' this is always to be avoided as much as poſſible.

I never begin to put my Plants out, 'till about ſix o'Clock in an Evening, unleſs I can be ready for planting in a Rainy Day, which is always to be preferred; in the other caſe, I always keep the Men at this work as long as they can ſee. If it can be done *in*, or *immediately after*, *Rain*, that will ſave the Expence

pence of watering the Plants; which is an Object worthy of Attention in a large Work of this Kind; beſides the Circumſtance of the Plants ſucceeding much better.

On *Friday* the *ſixth* of *July* we had fine Rain, and on the *ſeventh I finiſh'd:* On the *Eleventh* we had ſome light Showers, and on the *twelfth fine Rain* which ſecured Life to my Plants; but, they began to look ſickly before the *twelfth*; three of the intervening Days having been *Hot* and *Dry*.

On the *ſeventh* I alſo planted three of the five feet Ridges, with one Row of *Boorcole* Plants on each Ridge, the Plants in the Rows two Feet aſunder.

Be it obſerved, that, for the obtaining *large* Cabbages of the *Spring-Sowing*, the Seed ought to be ſown early in *March*, and, if once planted out before the *final* planting them, it will be an Advantage to the Crop: The Caſe is the ſame with reſpect to *Turnep-Cabbage*; but, it is more *eſſentially* neceſſary in the *Common Way* of raiſing Cabbages; for, otherwiſe, they will run into long Shank, and will not cabbage well; moſt Gardeners allowing their Plants too little room; that is not the caſe here, *my Cabbage* and *Turnep Cabbage* Seeds were not ſown 'till the 26th of *March*; and I was ſo much hurried, that I never had time to get them planted out before the *final* planting; ſave about 3000 Plants; and yet, they are all very ſhort in their Shanks. This may juſtly be attributed to the Manner of diſpoſing them, and the Culture they receive in this Huſbandry.

HERE, I cannot omit to remark one Circumſtance, for the Obſervation of Gentlemen and Farmers who may adopt this Huſbandry, *viz.* That I have not one Cabbage this Year of the Sort I intended to have; what I have being chiefly *Sugar-Loaf*, the Seeds-Man having deceived me; and, if I had not happened to have about an ounce of *Turnep Cabbage* Seed by me four Years old, I ſhould not have had one Plant of that Kind this Year; the Seed, which I bought in *Dublin* for it, turning out a *poor*, *ſmall*, wretched Cabbage.

I ſhall now proceed to make my Report of the farther Treatment, and Succeſs, of theſe Crops, before I proceed to the *Turneps*, *&c.*

Upon the 17th of *Auguſt*, I *Horſe-Hoed* my *Cabbage*, *Turnep-Cabbage*, and *Boorcole*, for the firſt time, by taking off, at one Furrow of the Plow, only *one ſide* of each Ridge cloſe to the Plants: thus they remained 'till the 25th, when, I ran the Plow in the ſame Furrow; by which, with the firſt Furrow, I plowed about *twenty one Inches deep.* This being finiſhed, I immediately returned the Earth back to the Plants; this afforded them freſh Nouriſhment; and, in order to give their Roots time to penetrate this freſh Earth, which by the *Horſe-Hoeing* was become very fine Mold, I let them remain in this ſtate 'till the 12th of *September*; when, I Horſe-Hoed them *again*, by taking off the *other ſide* of every Ridge; and on the 20th deepened the Furrow in the ſame manner as the former, and immediately returned the Mold back to the Plants; and on the 18th of *October* threw up a ſmall Furrow to each Side of every Ridge, which finiſhed the Culture of theſe Crops, and reſtored the Ridges to the Form in which they were when the Plants were put out upon them.

THE Plants all grew very luxuriantly; and, in the hotteſt Weather, were infinitely more *brittle* in their Leaves, than any I could ſee in the Gardens of my Acquaintances: Which is a certain Indication of Health in this Kind of Plants.

THE *Horſe-Hoeing* was ſo effectually deſtructive to Weeds, that it coſt me but *four-pence* to weed theſe Crops, which occupied about an Acre and three Quarters of Ground.

The repeated *Horſe-Hoeings* coſt me *Two Shillings and Four Pence* an Acre, for Workmen's Wages, excluſive of Horſes, of which I uſed two, and ſometimes three.*

December the 8th, I cut one Row of the *Cabbages*, they beginning to decay, which is indicated by their *burſting*. The Number was 258, and they weighed *ſixteen Hundred Weight, three Quarters*, and *twenty one Pounds*, i. e. 1897 *Pounds:* which, at an Average, is *ſeven Pounds* and *near ſix Ounces ſor* each *Cabbage*.

The Produce upon an Acre, on weighing this Row, which was 516 Feet long, amounted to *Twenty three Tons, ſour Hundred, two Quarters* and *ſourteen Pounds*. i. e. 52038 *Pounds:* Which is, at leaſt, from *ten* to *ſeventeen* Tons leſs, as I compute, than the Produce would have been upon an Acre, had I obtained the Sort

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* In *Horſe-Hoeing, the Horſes are always yoked one before the other, as in a Cart.*

I intended to have, which was the *large, late, Dutch* Cabbage. However, ſuch a Produce as was here obtained, will be an ample Reward for the Labour any one may beſtow in this Huſbandry, as will appear when I ſhall come preſently to ſhew *how many Cattle Twenty three Tons* will maintain.

December the 17th, I took up one Row of the *Turnep Cabbages*, which were in Number 249, they weighed *Eighteen Hundred Weight*, and *Fifteen Pounds*, i. e. 2031 *Pounds*, after chopping off the *Roots* and *Stalks* below the *Turnep*, which ought not to be weighed, as being no part of the Food for Sheep, or Cattle: The Weight of theſe Plants, one with another, was ſomething more than *Eight Pounds* and *two Ounces*, *ſome few* weighed *fourteen and fifteen Pounds*. The Produce upon an Acre, on weighing this Row, which was 498 feet long, amounted at the ſame proportion, to *Twenty five Tons, fifteen Hundred, three Quarters and ſeven Pounds*, i. e. 57761 Pounds.

THIS Crop was much greater than ever I had before; and, from ſome Obſervations I have made this Year, I am inclined to believe their Culture may be improved to a Produce of *ten Tons more* upon an Acre: But, abſtracted from that, the Produce already obtained is more valuable than any Crop I know of, for they are invincible by the Winter, either *in* or *out of* the Ground. The great Diſtreſs of even the *careful* Farmer is in the Months of *March* and *April*, for his *Ewes* and *Lambs*, when *Turneps* are gone, or are but very indifferent Food, and all other green Winter Food is exhauſted.

FEEDING *Ewes* upon *Dry Hay* affords but little Milk to their Lambs; add to that, Hay is not made without great Expence and Anxiety, over and above the Rent of the Land; for really, where the Farmer is ſo unfortunate as to have his Hay upon Hand in wet Weather, it is a Buſineſs which will exerciſe his Patience, no leſs than it will conſume his Money.

One ſuperior Excellence in theſe Plants is, that Sheep will prefer them to Turneps; another is, that they are a firmer and more ſubſtantial Food: and, to aſcertain their Firmneſs in Texture, and Quality in keeping after being drawn, I have kept them near *twelve Months* expoſed to the open Air, to the Extremes of Heat and Cold, and, after that, they were ſound, ſave ſome few.

If any Perſon who may cultivate this Plant for Sheep, ſhould keep a large Stock, he may let the Plants remain in the Ground 'till he wants them; in that caſe, he may turn the Sheep into the Field, where they will eat them quite down to the Stems, and, as the Plants ſtand naturally above the Ground, and by my Manner of cultivating them, they are ſtill higher, by being placed on the Tops of the Ridges, the Sheep cannot dirty them, as they do Turneps, when turned into the Crops; add to this, that when the Sheep have eaten all the *Leaves*, and begin to eat the *Butts* or

*Turneps* of this Plant, *they* will not rot as *Turneps* do, when wounded; but will certainly keep ſound, even after that, for *ſix Weeks or two Months:* nay, Yeſterday, 15th of *February*, upon dreſſing ſome of them for Seed, I found ſome, which had been accidentally wounded by Cows, upwards of three Months ago, perfectly ſound, notwithſtanding the great Quantity of Rain which had fallen upon them.

WHEN the Leaves are wanted early in the Winter for Sheep, or Black Cattle, or, the Land is wanting for any other Crop, in either Caſe the Plants may be taken up, the Leaves taken off, and the *Turneps* thrown any where upon a piece of ſound *dry Graſs-Ground*, where they will keep, and be ready for Sheep in the *Spring:* But this Work is attended with ſome Trouble, and Expence, the Roots being very firm in the Ground.

THE latter End of *December*, and in *January*, the Plants begin to throw out freſh Shoots which are to produce the

Seed; and, when they begin to do ſo, all the Leaves of the preceeding Year fall off, being firſt greatly decayed; and as the Leaves, in *October* and *November*, are really very numerous, and afford a large Quantity of Food for Cattle, it is well worth the Trouble to take them off before they begin to decay, and, when this is judiciouſly done, the Trouble is very little.

THE Method which I would recommend, is that two Men be ſent into the Field, each taking one Row before him, and, as he pulls off the Leaves, laying them upon the Ridge between the *Turneps*; when theſe two Ridges are finiſhed, or as many as may be thought neceſſary, let one Horſe or more, be brought with a pair of Cleeves upon his Back; let him be placed in the Furrow, between the two Rows, and, as he paſſes along, the two Men fill the Cleeves, which may be moſt conveniently done, from ſuch a Diſpoſition of the Buſineſs, without any Injury to the *Turneps* in the Rows.

WHERE extenſive Crops of theſe Plants are raiſed, it will be very uſeful to collect all the Roots, whether left in the Field by Sheep, or otherwiſe ſeparated, and mix them with Heaps of Earth, where a putrefactive Fermentation will ſhortly commence, by which the Earth will be ſtrongly impregnated with *volatile* and *fixed* Salts, and will then be an excellent Manure; and indeed all *Succulent Vegetables* will contribute to the ſame End, under the like Treatment.

I muſt beg Leave, in this Place, juſt to mention, for the conſideration of the SOCIETY, and which I earneſtly recommend to be tried by Mariners, another Uſe, to which, I think, this Plant may be converted, which is ſtill of more Importance, than any which I have yet named.

WE loſe more Men in the beginning of a *War* in the *Navy*, as I have been informed by the *Navy-Surgeons*, by the *Scurvy*, than by the *Enemy*, which is attributed to their ſudden Change of Food. From *freſh* Proviſions and *Vegetables* on Shore, the Men are at once brought to *Salt* Proviſions.

THE *Turnep* of this Plant, I am inclined to believe, would keep three or four Months on Ship-Board, perhaps longer; but the *Navy-Surgeons* have told me, that if it would keep *ſix Weeks*, it would ſave the Lives of many Men. Something has been ſaid on this Subject before, in a *Pamphlet* intitled *Hints on Huſbandry*, in a *Letter* to the *Dublin-Society*, printed by *Flinn* in *Caſtle-Street*.

I cannot diſmiſs this Subject without earneſtly recommending the Culture of this Plant to the Attention of the Farmer, particularly to ſuch as keep any Stock; and, altho' the Plant is very little known, except in the Gardens of the Curious, yet, whoever will cultivate it in the way I have here ſet forth, will find himſelf amply repaid for his Labour; for how comfortable is it, for a Man's Mind to be at Eaſe about his Stock, in the Months of Scarcity? Whereas I have every Year obſerved, that the Farmer's Stock, particularly Ewes and Lambs, are turned into his Meadows to live upon the Springing Graſs, to the irrecoverable Injury of the Hay Harveſt; as frequently have I ſeen them upon Young Clover, to the manifeſt Injury of that Crop.

I could enlarge greatly upon theſe injudicious Practices, but in brief I ſhall only ſay, that if I ſhall live to ſee the Culture of this Plant generally eſtabliſhed, I ſhall have the comfortable Reward of knowing that I have been uſeful to Mankind; a Circumſtance which will be more grateful to me, than if I had conquered a Nabob, or extirpated an *Indian* Nation.

December the 18th, I cut two Perches in Length of one of the Rows of *Boorcole*, which contained Twenty one Plants; they weighed one Hundred and eighteen Pounds, which is very near *Five Pounds and Ten Ounces* for each Plant: But I am inclined to believe, that theſe Plants will ſucceed as well, if they are planted only

*Eighteen Inches* aſunder in the Rows. However, at the above Proportion, there would be ſeventeen Tons and Fourteen Hundred upon an Acre. But, if the Produce would be the ſame, were the Plants only *Eighteen Inches* aſunder, in that Caſe an Acre would produce, by this Culture, above Twenty three Tons and twelve Hundred.

This Plant is well worthy the Farmers or Graziers Attention, for, as faſt as it is cut, it will again, in about a Month or ſix Weeks, afford another Crop: I have been cutting theſe Plants for my Family-Uſe ever ſince the middle of *Auguſt* laſt; I believe ſome of them have been cut *three Times*; and they are excellent for the Table. For feeding Cattle and Sheep they are highly valuable, as no Froſt will injure them; and, altho' the firſt Crop amounts not to as many Pounds upon any given Quantity of Ground as the others, yet the ſucceeding Crops will, I believe, make their Produce nearly, or quite, of equal Weight with any other of the Cabbage Kind. But I muſt not omit to obſerve, that, as theſe Plants afford only open Leaves, and many of them very ſmall, there will be a little more Trouble in collecting and carrying them to the Sheep and Cattle, than there will be with the other Kinds.

It may not be improper to obſerve likewiſe, that, upon the Approach of the Spring, when they begin to throw out their Spring Shoots for Seed, if the large Leaves have not been taken off for Winter Uſe, they will decay and fall off in the ſame Manner as the Turnep Cabbage Leaves have already been deſcribed to do.

I have not yet tried it, but I believe that the beſt way of uſing this Plant, would be to allot one whole Field to the Culture of it, proportioned in Size to the Stock intended to conſume the Produce; and in *September* or *October*, to turn the Ewes into the Field for a few Hours, Morning and Evening, and then lodge them on any piece of Graſs or Fallow, which may want Improvement, to which they will greatly contribute by emptying themſelves upon it; and thus continue turning them into the Boorcole Field, 'till they have eat all the Luxuriant Leaves; then let the Plants reſt a Month, and there will be another Crop, by having two ſmall Fields under this Crop a Flock of Store Sheep might be maintained a whole Winter at a very ſmall Expence; for, whilſt the Produce of *one* Field would be conſuming, the other would be coming on.

This Method occurred to me from an Accident, which attended my Boorcole this Year. My Cows got into the Field, and preſently devoured ſome of the Leaves of the Plants; theſe Plants have engaged my Attention ever ſince, and I have the Pleaſure to ſee them again in a very Luxuriant State.

If any Perſons ſhould be able to put this Scheme in Practice before I can accompliſh it, I recommend it to them, not to let the Sheep paſture ſo long upon the Crop, as to wound the Stalks for want of Leaves; as too great an Injury to the Stalks may check the ſucceeding Growth; which Injury, I am inclined to believe, will not happen to the Plants, at leaſt not in ſo great a Degree, whilſt they have a ſufficient Quantity of Leaves.

It doubtleſs will be obſerved, that I confine this Scheme to *Cows*, or *Store* Sheep: My reaſon for that is, that fat Sheep ſhould always have as much Food before them, as they may chooſe to eat; add to this, that Sheep, when they are *fat*, are more ſubject to be lame, than *Store* Sheep, to which *plowed Ground* will greatly contribute.

We ſhall now return to the State of the Field, in which it was after being Manured, and Plowed into ſmall Ridges of five Feet Breadth, with the Compoſt under them in the Fallow part, and part of the Fallow with the Lime and Earth, and the Potatoe Ground aided with the Lime.

Upon the 14th of *July*, I ſowed with my *Drill Plow* what remained of the *Ridges* of the *Fallow* manured with the Compoſt.— That *part* of the Fallow which was Manured with the *Lime* and *Earth*—and that part of the Potatoe Ground which was before deſcribed to be in Ridges, with Turneps: And that *part* of the Fallow before deſcribed to be flat, and manured with a *Double* Proportion of the *Compoſt*, I ſowed in the *promiſcuous* Way with Turneps alſo.

The Drilled Turneps filled only *one* Row, along the Middle of each Ridge.

When the *Drilled* Turneps were about three Inches high, I thinned them by *Hand*, as being much preferable, and more expeditious than any Inſtrument, intending to have them ſingled out, to about one Foot, aſunder in the Rows: But, it being ſo new a Work, the Women could not be brought to do it effectually at once, they apprehending, that the whole Crop would be loſt, and urging, that they were ſure there was already

ready too much Ground allowed to one Row: Under theſe Circumſtances, I could not get this Work done quite to my Mind this Year, as I had beſides this Field, two others ſown in the ſame Way, amounting in all to about twelve Acres.

My Turneps ſhould have been ſown at leaſt three Weeks earlier; but the immoderate, and continual, Rains of the preceding Winter involved me ſo much with my Spring-Sowing, that I could not accompliſh my Turnep ſowing earlier.

The Turneps after being thinned, received the Horſe-Hoeings, much about the ſame times, and diſtances, as the Cabbages; with this difference only, that I deepened the Furrows of but a few Ridges in another Field by a ſecond Plowing in the ſame Furrow, which I did not find to benefit the Turneps much: For, if the Ground be well prepared before the ſowing, the Depth of one

Furrow will be enough for Turneps, provided *that* be *deep* and *bold.*

THINNING the Turneps in *Drills* by *Hand* coſt me *Eight Pence* an *Acre*: Weeding of them coſt me *four Pence*; and the repeated *Horſe-Hoeings* about *fourteen Pence* an *Acre* for Workmen's Wages, excluſive of the Horſes of which I generally uſed two, except in very hôt Days, and then I found three were neceſſary.

THE Broad-Caſt Turneps were carefully thinned by *hand*, when they were about two Inches high; which the Women did with more Courage, than they did the Drills; and ſometime afterwards, I *Hand Hoed* them *once*, and *wed* them *twice*.

THINNING them by *Hand* coſt me *four Shillings* —— *Hoeing* them afterwards coſt *Eight Shillings*, and *Weeding* them coſt me *two Shillings and four Pence*. They were ſcarcely half an Acre; this Expence being therefore *Doubled*, they coſt me at the Rate of *twenty eight Shillings* and *eight*

*eight Pence* an Acre, over and above the extraordinary Plowing, and double Proportion of Manure.

In truth, this Crop greatly exceeded my Expectations, being by far the beſt I ever had in the *Broad-Caſt* Way: But, I attribute their Succeſs *wholly* to the thinning them *by Hand*; for two, three, four, and often more, Turneps will be ſo united, and interwoven, that it would be impoſſible for the moſt dextrous *Hoer* to ſeparate them; whereas the Fingers and Thumb will preſerve the *Maſter Plant*, whilſt the others are moſt conveniently drawn from it by the *other* Hand of the Perſon employed: Add to this, that there is no Labour, in which we are more liable to be deceived, than *Turnep Hoeing*.

In one of my other Turnep Fields, I manured about an Acre of Ground with *Shell Marle*, which I ſowed in *Drills* with Turneps in the ſame manner as the former, on the 16th of *July*.

In the ſame Field, I manured about half an Acre with the *Native Earth*, which had been expoſed to the Weather for upwards of *two Years*, which I ſowed likewiſe in *Drills* with Turneps on the 16th of *July*.

Both theſe Crops were thinned by Hand, and *Horſe-Hoed*, in the ſame manner as the former.

Thus we have *five Experiments* in the *Drill* Way upon *Turneps*, with different Manures. One with the *Compoſt* already deſcribed—one with *Lime*—one on Potatoe Ground, aided with *Lime*—one with *Shell-Marle*, and one with *Native Earth*; and alſo, one in the *Broad-Caſt* Way, with a double Proportion of the *Compoſt*, and an extraordinary Plowing.

The Principal Point to be determined by theſe Experiments is, whether ſowing Turneps in *Drills*, or the *Broad-Caſt* Way, will afford the heavieſt Crop:

But the Trials with the *different Manures* will I hope be alſo uſeful.

THE Produce of *Drilled*, and *Broad-Caſt*, Turneps compared.

DECEMBER the *ſeventeenth*, I meaſured out *three Square Perches* of the beſt of the *Broad-Caſt Turneps*; and alſo *three Square* Perches of the *Drilled*: And the Produce was as follows:

THE three Perches of the *Broad-Caſt* Turneps weighed ſixteen hundred Weight and one Quarter, i. e. 1820 Pounds; which, at the ſame Proportion, amounts upon an *Acre* to *forty three Tons*, five hundred Weight, three Quarters and ſix Pounds, i. e. 96970 Pounds.

THE three Perches of *Drilled* Turneps, weighed ſeventeen hundred Weight, two Quarters and twenty one Pounds, i. e. 1981 Pounds, which, at the ſame Proportion, amounts upon an *Acre*, to *forty* *ſeven Tons*, two Hundred, three Quarters and two Pounds, i. e. 105590 Pounds.

| | T. | C. | Q. | ℔ | | Pounds |
|---|---|---|---|---|---|---|
| An Acre of Drilled Turneps | 47 | 2 | 3 | 2 | or | 105590 |
| An Acre of Broad-Caſt, ditto | 43 | 5 | 3 | 6 | or | 96970 |
| In favour of the Drilled | 3 | 16 | 3 | 14 | or | 8620 |

THUS we ſee, that, notwithſtanding the extraordinary Proportion of Manure, and the extraordinary Plowing, which was afforded to the *Broad-Caſt* Turneps, the *Drilled* Crop, with Intervals of *five feet*, produced the greateſt Quantity upon an Acre, by *three Tons*, *ſixteen Hundred three Quarters and fourteen Pounds Weight*.

THE *Drilled* Turneps in my *other* Fields were very *large*, regular, and even Crops, as many Gentlemen ſaw during their Growth.

THOSE ſown on the Acre manured with the *Shell-Marle*, were very near as good as the reſt—thoſe ſown on the *Potatoe* Ground were not near ſo large, but were regular—thoſe ſown on that *part* of the Fallow Ground which was *limed*, were very poor Crops—and thoſe ſown on the Ground manured with the *Native Earth* were *miſerable*.

THE Crops in my *other* Fields were all treated in the ſame Manner as that already deſcribed; except, that the *Fallows* were broke in *September* 1763, inſtead of *March* 1763.

IT now remains to deſcribe the Nature and Quality of the Land, and then to draw Concluſions from the various Experiments.

THE Land lies upon a *Lime-Stone Quarry*, which is very near the Surface; and is, naturally, a very ſtrong and ſtubborn Soil; with an infinite Number of looſe *Lime Stones* in it. With dry Winds, or a parching Sun, the Ground unites, and is as hard as Bricks; moderately wet, it is reducible by Inſtruments; but, when thorough wet, it runs together, and is like *Brick Clay* when tempered. This, I repeat it, is the natural Quality of the Land, and is what the Writers would call a *Barren*, *Grey*, *Stiff*, *Earth*, but is not quite a *Clay*.

I have found repeated Tillage, when the Land is in a proper State of *Moiſture*, will reduce it, and diveſt it of its natural Adheſion: *Tillage* and *Manure* together render it capable of producing any thing: As, I believe, ſuch Agents will do upon any Land, provided it can be kept moderately *dry*. The Fields, which I had under Turneps and Cabbages, have been in Appearance all the Summer a *fine Loam*, and really bore the Complexion of very fine Land; abſtracted from the rich Appearance of the Crops.

I recommend to the Practice of all Perſons, who may have *ſuch* Land as this to work upon, never to harrow the *Fallows* before Winter; but, as early as may be in the *Spring*, and during the working the Fallow in the *Summer*, but not to leave more than one Day's plowing *unharrowed*, but rather harrow in the *Evening*, what has been plowed in the *Morning*; and then the Harrow will reduce it: But, if the Plowing is continued for two Days, without any harrowing, the Harrow will have no more Effect upon the Land, than it would have upon *Bricks*, unleſs it be moiſtened with Rain; in which Caſe it will be reducible, as, it may be remembered, I deſcribed the *Potatoe* Ground to have been reduced, after Rain which fell on the 12th of *May*.

### *Concluſions to be drawn from the Preceeding Experiments.*

THESE Experiments prove Gardens to be no more than *Farms* in *Miniature*, under an extravagant Expence of Culture; ſince we can with the *Plow* raiſe more Tons of the *larger* kinds of Garden Vegetables for *twenty Shillings*, than by the *Spade* for as many Pounds: And indeed, I do not ſee, why moſt of the *ſmall* ones may not be raiſed in the *ſame Way*.

THEY alſo prove, that it is profitable for the Farmer to raiſe *different Species* of *Cabbage* for his Cattle in Winter; and I have it in Contemplation to try them for *Summer* Uſe alſo. However, for the Winter, it is an Object of great Importance, not only to the well feeding of Cattle, but to the ſaving an infinite Conſumption of Hay, which by this Huſbandry may, at leaſt, be paſtured in *Summer*.

THE Experiments on the Turneps prove, *firſt* that it is more profitable to raiſe them in *Drills*, than in *Broad-Caſt*: *Secondly*, that the Culture is a great deal *cheaper*. *Thirdly*, that leſs *Manure* will produce a larger Crop, than in *Broad-Caſt*, provided it be diſpoſed in the ſame way as mine was. *Fourthly*, Practice ſhews the Expence of drawing the *Drilled* Turneps for *Sheep* or *Black Cattle*, to be at leaſt two thirds leſs, than drawing the *Broad-Caſt*. *Fifthly*, in the *Drill* Way not a Turnep need be left upon the Ground; whereas, in the *Broad-Caſt*

Way, the leaving many is unavoidable, to the great Annoyance of the ſucceeding Crop, particularly if that ſhall be *Barley*: And *Sixthly*, that the Land is left, after *Drilled* Turneps, in a much higher State of Preparation for a ſucceeding Crop, than it can poſſibly be in the *Broad-Caſt* Way. To theſe Advantages another may be added, which I find very material, *viz.* That of ſlicing them for Black Cattle, which is highly neceſſary, even when they are ſmall, nay more ſo, for Cattle are ſometimes *choaked* with a ſmall Turnep. A Man will be near as long ſlicing a *ſmall* Turnep as a *large* one; and will make no Diſpatch; whereas, my Men and Boys now ſlice for me every Evening about *nine hundred Weight* in an Hour; which is a Taſk upon them after Night-fall, except on *Saturday* Nights; then they ſlice double the Quantity.

As it ſeems to be a Paradox to ſay a Man will ſlice a *large* Turnep as ſoon as a *ſmall* One, it may be proper to explain it to the Reader. The Man is in danger of cutting his Hands when he is ſlicing a ſmall Turnep; but in no ſuch danger with a large One: And, beſides that, one Slice of a large One contains more Food, than two, or three, whole *ſmall* Ones.

THESE Experiments prove, that the *Potatoe* Tillage *in the Manner it is now generally practiſed*, is not ſo beneficial an Improvement of Land, at leaſt not of *ſtrong* Ground, as is generally imagined; altho' there is a *greater* Conſumption of *Dung* than in any other Huſbandry.

THE Experiment with the *Lime*, upon the *Fallow* Ground, proves *Lime* to be an inſufficient Manure, for the *high Improvement* of *Lime Stone* Ground. There are ſo many Advocates for *Lime* as a *Manure*, that it is adventurous to ſay any thing againſt it; but, I hope, the Reader will obſerve, that I pronounce upon it, as being inſufficient, "for the high "Improvement of Lime Stone Ground." I have tried *Lime* in another Field of my Farm, in which I ſowed *Wheat*, and my Succeſs was no better in that than in my Turneps: And I earneſtly recommend it to every Improver, who may have favourable Opportunities of getting *Lime*, that he try it upon a *ſmall Patch*, before he launches into a large Expence for it; ſuch Caution may perhaps ſave him Money. This Advice ariſes from Practice; for, I imprudently burnt a large Quantity of *Lime*, at an Expence of near an *Hundred Pounds*, and, I can truly ſay, I have not received in Benefit as many *Shillings*.

THE Experiment with the *Shell Marle*, proves *that* to be a very high, and excellent Manure, for, as it will produce Turneps upon *poor Ground*, it may be ſafely relied upon for any other Crop.

THE *Native Earth* proves to be *perfectly inſufficient* for *Turneps*; tho' it certainly mends the Ground a little, beſides that it adds to a *ſhallow* Soil.

## *Accidents and Diſtempers.*

TURNEPS are ſubject to be deſtroyed by the *Fly*. In an Orchard I ſowed two Acres with Turnep Seed in *Drills* in *July* laſt. They were invaded by the *Fly*; I had a Conteſt with them for a Fortnight, and, at laſt, conquered them; with a loſs of only *four*, or *five*, Perches of my Turneps, which happened where there were moſt Trees. Every Morning *before the Dew was off*, I had the Rows daſhed with *Lime*, which was ſlacked every Day on purpoſe. This *Lime* adhered ſo cloſely to the Leaves, when they were wet with the Dew, that it defended the *upper Sides* from Injury: Then I found the Flies began upon the *under Side* of the Leaves, which I had never ſeen them do before; however, upon this, I was obliged to have the Duſt thrown *very low*; and, whilſt the Plants were wet, a great deal adhered to them, even on the *under Sides*:—Thus I ſaved my Turneps, which were as fine a Crop as any I had, ſave the four, or five, Perches before mentioned.

THE *upper Side* of the Turnep Leaf, in its Infant State, is *very ſmooth*; and, on that part the Flies always lodge; unleſs they are interrupted; in that Caſe they will deſtroy the Plants by wounding the *under Side*, which is not ſo inviting to the Inſect as the *Upper*, it being a little *Rough*, tho' not enough to protect it from them.

THE greateſt Inconvenience I found in this Work was, that every little Shower of Rain waſhed off all the *Lime*, and then the Work was to begin again; ſometimes I repeated it *three* Times a Day: However, it will be found to anſwer well, but it requires to be done with Care.

I have, by the *ſame Method*, ſaved *Lucerne*, which is alſo ſubject to be deſtroyed by the *Fly*, upon its firſt coming up.

I diſcovered laſt Seaſon three diſtinct Species of the *Turnep* Fly (if I may ſo call it.) One of them is black; it ſeems to hop like a *Flea*, and reſembles it exactly. The ſecond is a ſmall degree *larger*, and very diſtinguiſhably has *Wings*, upon which are two *ſmall white* Specks; and the Inſect is of an *oval form*. The third is like a *Domeſtick Fly*, but not by a fourth part ſo large.

The Turnep-Cabbage is ſubject to the *Ruſt*, or Mill-dew. In my Orchard I had ſome Plants put out, at different Diſtances, for Experiments; they grew very well for a Time; but they were all infected with the *Ruſt*, and thoſe neareſt the Trees ſuffered moſt. In my Field I could find but *three*, which were injured by this Diſtemper. This ſeems to prove, that they require an open Expoſure; and therefore, they better ſuit the Purpoſe, for which I have recommended them.

Turneps, *Cabbages*, *Turnep-Cabbages*, and *Boorcole*, are Food for *Black Cattle*, and *Sheep*.

A Sheep, I find, will conſume about *twenty Pounds* of *Turneps* in *twenty four Hours*, provided they are allowed as many as they can eat, which ſhould always be allowed to *fat* Sheep: But, as Sheep vary in Size, ſo, I preſume, will they conſume *more* or *leſs* Food.

An Acre of *Turneps*, of *forty ſeven Tons* to an Acre, will maintain *one hundred Sheep*, fifty two Days, allowing each Sheep twenty Pounds a Day. My Sheep weigh about twenty Pounds a Quarter.

In the Month of *November* laſt, I gave my Sheep Acceſs to ſome *Pea-Ricks*, which I had erected on purpoſe for them; of which they eat with great Eagerneſs; but I find they affect them in the ſame Manner as they do *Horſes*, when given to them *new*; for, the Sheep, I apprehend, from violent *Cholicks*, which, I conceive, the *Peas* gave them, were ſeized with ſtrong Convulſions; and in this way I loſt *Six* of them, in a few Days; before I conſidered what could be the Cauſe: But, having examined the Inteſtines of every One of them, and finding no Symptoms of any other Diſeaſe, I was led to draw the above Concluſion; and what ſeems to confirm my Opinion is, that I have not loſt One ſince I took them from the *Peas.* If other Perſons have not met with the like Accident, who have fed their Sheep with *new Peas*, it ſhould ſeem, that *Turneps* and *Peas together* do not agree with Sheep. —However, that is a Fact which I ſhall ſoon be able to determine, for, I ſhall admit the Sheep to the *Peas* again to-morrow, which will be the 20th of *February*; a Seaſon in which it is imagined we may ſafely give *Peas* of the *preceeding Year* to *Horſes*, and therefore, I conceive there can be no danger in giving them to the *Sheep:* But, if they ſhould be affected as they were before, I think there cannot remain a Doubt, that the Peas and Turneps diſagree in their Stomachs. And here I ſhall leave a Space to add to my Report hereafter.

Now, the 15th of *March*, the Sheep have been ever ſince at the *Peas*, and I have not loſt One.

Of *Cabboge*, and *Turnep-Cabbage*, a Sheep of about twenty Pounds a Quarter, will conſume about *fifteen Pounds* a Day. An Acre at that Rate, will maintain *one hundred* Sheep about *thirty four Days*. The *Cabbage* and *Turnep-Cabbage* are a *firmer* and more *ſubſtantial Food* than *Turneps*.

I have fed a *Cow* this Winter upon *Turneps*, and I have now *two Bullocks*, which are *Stall-feeding*, upon *Turneps* alſo: It is computed, that they weigh between *four* and *five* hundred Weight each; and I find by Experiment, that they each of them eat about 216 *Pounds* in *twenty four Hours*; which is, therefore, about *half* their *own Beef Weight*: from hence we may with reaſon imagine, a Beaſt will eat every Day of *Turneps*, at

Stall-feeding, about *fifty ſix Pounds*, for every *Hundred Weght* of *Beef* he may contain.

One of the Bullocks was put up *miſerably poor* from the *Plow* for an Experiment, on the *fourteenth* of *December*; he took kindly to the *Turneps*, and on the *Sixteenth* I began to give him with his Turneps, *Pea Flower*, to the Amount of *eight Pounds* every Day; and I find he is greatly improved, but he will not be Beef; tho' I am very inclinable to believe, that, if he had been put up *ſix Weeks ſooner*, in *April* he would have been *good Beef*. This Experiment I ſhall repeat next Year: What induces me to mention it here, is, that ſome other Perſons may perhaps try it next Winter, and, if they ſhould, I ſhall be much obliged by their Report of the Effect. I am led to believe, that Bullocks may be profitably fed with *Peas*, becauſe *Horſes*, and *Pigs*, thrive very faſt upon them.

When the Cattle are firſt put to *Turneps* they *dung* but *little*, the *Turneps* going off chiefly by Urine; the Quantity of which is really incredible; but, after ſome Time, they dung more; and, from a *Whitiſh* Colour, the Dung reſumes the *Natural* Colour, and is of the common Firmneſs. I allow each of the Cattle *ſeven Pounds* of Hay every Day; and I do not find that they eat fewer *Turneps* on that Account: The Reaſon I believe is that the *Hay* makes them more eager for the *Turneps*: They refuſe *Water*.

To each of my *Cows* and *Store Cattle*, I allow *ſeventy two Pounds* of *Turneps* a Day, and a little *Straw*, *thirty ſix Pounds* being what I find a moderate ſized Beaſt will eat at a Meal. To my *Plow Bullocks* I allow the *ſame Quantity* of *Turneps*, with as much *Straw* as they can eat; but I forbid their having the *Turneps*, 'till they have been *unyoked* about an *Hour*, and after they have eat ſome *Straw*; as I conceive the *Turneps* are *too Cold* for them immediately after their Labour.

I have lately confined a *Milch Cow* four Days, and fed her with *Turneps*, and I could find no diſagreeable Flavour in her Milk from that Food; tho' I have often heard *Turneps* complained of, as giving a bad Taſte to Milk, when Cows are fed with them; Query, whether it might not ariſe from the *Leaves* of Trees falling upon the *Turneps?* Leaves of Trees always ſpoil the Milk when Cows eat them.

Here follow

## *Calculations upon the feeding* Black Cattle, *with Turneps and Cabbages.*

SUPPOSE four Cows or Bullocks, of four hundred Weight each, to be Stall-fed upon *Turneps*, allowing each Beaſt 216 Pounds a Day, an Acre of *forty ſeven Tons*, would maintain them *one Hundred and twenty one Days*. Indeed a larger

Stock ſhould be put up, or heavier Cattle, as the Turneps will not keep ſo long.

SUPPOSE *ten Dairy Cows* to be maintained upon *Turneps*, allowing each Cow *ſeventy two Pounds* of Turneps a Day; at this Rate an Acre of *forty ſeven Tons* will keep them *one hundred and forty ſeven Days*. All Cattle, fed in this Manner, ſhould have about *ſeven Pounds* of *Hay* a Day allowed to each.

THE *fat* Cattle eat about *one hundred and an half* of *Cabbages* a Day, therefore an Acre of *twenty three Tons* will, at that Rate, maintain four Bullocks of *four hundred Weight each*, ſeventy ſix Days.

WHEN fed with *Cabbages*, they *dung more*, and make *leſs Urine*, than when they are fed with *Turneps*, and will drink a little Water.

HENCE I am induced to believe, that *Cabbages* are a better Food for Cattle than *Turneps*; I am fully perſuaded near as many Tons may be raiſed upon an Acre, with *proper Seed* and *good Management*; but they will coſt *five* or *ſix Shillings* an Acre more.

There remains one general Obſervation to be made, and which I imagine contributed greatly to the Succeſs of the above-mentioned Crops, *viz.* That we had for *theſe Species* of Crops, very ſeaſonable and fine Rains: From the *ſixth of July*, on which Day I began to put down my *Cabbage Plants*, to the *firſt of December* both incluſive, we had *ſeventy Days* in which there was, more or leſs, *Rain* and the latter end of *Auguſt*, and beginning of *September*, the *heavieſt Dews* that I have ſeen: From the *ſixth* of *July* to *December* the *firſt*, both incluſive, were *one hundred and ſeventy ſeven Days*; ſo that we had but *one hundred and ſeven dry Days*, many of which I ſee by my *Kalendar* were *Cloudy*, and *inclinable to Rain.*

## SPRING and COMMON WHEAT.

SOME little Time after receiving the Inſtructions I was honoured with from the SOCIETY, I was deſired by the Committee, then ſitting to ſettle the *Premiums* for the ſucceeding Year, to make a comparative Experiment between *Spring* and *Common* Wheat.

THE Purpoſe of this Experiment was to diſcover, whether *Common Wheat* would not ripen when ſown late in the Spring, as well as *Spring* Wheat.

ACCORDINGLY, on the 28th Day of *March*, I ſowed two Perches of each Sort of Wheat in my Garden, in Drills three Feet aſunder, at the Rate of *five Stone* to an *Acre*. I had but two *Pounds* of Spring Wheat, otherwiſe I ſhould have extended the Experiment.

THE *Common Wheat* came up well, but the *Spring Wheat* came up very thin in the Drills, which, for ſome Time, I apprehended was owing to ſome fault in the Seed; but the caſe was otherwiſe, as appeared afterwards from a ſecond ſowing in another Place: add to this, that in a few Days I diſcovered *Mice* had eaten great part of the Seed; however, ſome little of it eſcaped, and planted greatly, as did the *common* Wheat.

As a Subſtitute for the *Horſe-Hoe*, which could not be introduced in theſe ſmall Experiments, I uſed the *Spade*, and the Plants grew to Admiration.

The Fatality, which attends all *ſmall* Experiments in the *Corn Tribe*, followed *theſe:* For, I was obliged to cut the *Spring* Wheat before it was ripe, the Birds, in defiance of all Protection, having devoured moſt of it; however, it would have ripened completely, and, as a proof of this Aſſertion, I have a *few* Ears, which I ſelected from the reſt, which are *very fine.*

It may be proper to obſerve that the *Spring* Wheat was more expoſed to the Ravages of Birds, than the *other*, as the *com-*

*common* Wheat I ſowed was *bearded*, which is always a great, tho' not a perfect, Protection to it from Birds.

The *common* Wheat met with a *Diſtemper* which was quite as fatal to it, as the *Mice* and *Birds* were to the other: This was the *Ruſt* or Mildew: Before this Diſeaſe came upon it, it was as fine Corn as ever I ſaw, but it never ripened; altho' in Appearance the Ears were very fine.

This Diſeaſe attacking *this* Corn and ſparing *the other*, I am inclined to attribute to this Circumſtance, *viz.* That this was very *thick* and *ſtrong*; whereas the *other* was very *thin*, from the Accident before mentioned: Perhaps, had it been as thick, it might have ſhared the ſame Fate. So that I think theſe Experiments are not by any means *concluſive*, as to the ripening of either of theſe Species of Wheat, when ſown late in the Spring.

I ſowed another Plot of Ground, as was before mentioned, on the *fourth* of

*May* with *Spring Wheat*, which came up well, grew very ſtrong, and formed very fine Ears in *Appearance*, but never ripened.

On the 29th of *April*, I ſowed an Acre of very good Ground with *Common-Wheat*, which I ſteeped before-hand in *Putrid Water*; it came up in *eight Days*, but made no Figure 'till *June*, it formed ſmall Ears, but produced no Grain at all.

So far we have two *concluſive* Experiments, that *Spring Wheat* will not ripen, when ſown the *Beginning* of *May*; and that *Common Wheat* will not ripen when ſown the *latter end* of *April*.

Notwithstanding that our Queſtion is not anſwered by the two firſt Experiments; yet the Diſeaſe attending the *Common Wheat* has furniſhed ſome Obſervations with reſpect to the *Mildew or Ruſt*, upon Corn and other Plants, which tend principally to confirm thoſe made by the ingenious Mr. *Tillet*, Director of the Mint at *Troys*, and ſeem to contradict moſt of our *Engliſh* Writers on this Diſeaſe; many of whom ſeem to have implicitly followed others, who, I am afraid, have undertaken to account for, and furniſh Remedies againſt, a Diſeaſe, which perhaps they had never ſeen.

VARIOUS are the Opinions, and many of them contradictory in themſelves: But, upon the whole, Candour obliges me to own *myſelf* as much at a loſs to *determine with Certainty* the Cauſe of this Diſeaſe, as, I find, the many Writers are, who have thought themſelves perfect Maſters of it. Even by reading ſix pompous Pages, which I have gone over many Times, I ſhould ſcarcely *know* the Diſeaſe, ſo faint is the Deſcription: But it will ever be known by the greateſt Strangers to Country affairs under the *French Name*, which indeed is as truly Deſcriptive as it is Laconick. By them it is called *Rouille*, or Ruſt. By the *Romans* it ſeems to have been called *Rubigo*.

I ſhall omit to give my Obſervations upon this Diſeaſe at *preſent*, as it would oblige me to quote many tedious Paſſages from the Books; and, where there is a Contrariety of Opinions, altho' *without* Evidence: Yet, a little Man, with a few Facts only to ſupport a *new* Theory, would ſtand a chance of making but a poor Figure.

At preſent I join in Opinion with Mr. *Tillet*, and Mr. *Reneaume*; who ſeem to think that the extravaſated Juices of the Plants, operated upon, and condenſed, by the Acrimony of the Air, I ſhould rather ſay *incruſted*, are the Occaſion of it. To this I ſhall only add, that I am at *preſent* of Opinion, that the lacerated parts of the Plants giving Paſſage to, or rather changing the Courſe of, the Juices before-mentioned (which are the Nutriment and Life of the Plants) to the Diminution, and Loſs, of the Vegetable Food to the *nobler* Parts, is the true Cauſe of the Plants failing in their Produce: But, I repeat it, I attempt not here to account how, and from what cauſe, thoſe Lacerations, which I believe to be the Baſis of the Diſeaſe, happen.

THE Comparative Experiment between *Spring* and *Common Wheat*, I think, ſhould be repeated, as the Diſcovery thereby ſought for tends to a publick Benefit: but it ſhould be in a *larger* Way, and in an *open* Expoſure.

A Circumſtance has recurred to my Memory, which had eſcaped my Attention from the Time it happened, 'till ſince I entered upon this Subject.

LAST Spring a poor Neighbour of mine told me he had loſt the Seaſon for ſowing his Wheat, for want of Money to buy Seed, but that, if he could get a barrel of *Poland* Wheat (as he called it, which was the *White Cone*, he would then ſow his Ground: Accordingly he obtained the Seed, and did ſow it; but I underſtand upon Enquiry, that it produced not a good Crop. He ſowed it ſome Time about the *Beginning* of *February*.

AND yet I am informed there is a Gentleman in *Scotland*, who makes it his conſtant Practice to ſow his Wheat in the *Spring*, by *Choice*: And, that he intends to publiſh a Recommendation of that Practice.

THE lateſt I ever ſowed any with Succeſs was the *thirtieth* of *December*; but, that was only a ſmall Experiment, once in *England*.

A Noble Lord, who is a Member of the Society, informs me that he has ſown *Red Lammas Wheat twice* in *March*, *old Stile*; in a piece of Ground which had been *old Gardens*, and that the Produce was about *ten Barrels* an *Acre*.

The *ſecond* Time, his Lordſhip ſays, he ſowed the like Seed on the *Ninth* of *March*, *New Stile*, upon *Turnep* Ground; and that the Produce was computed to be *fourteen Barrels* an *Acre*.

His Lordſhip informs me, the only difference he obſerved between *that*, and the *October* Wheat, was, that the Wheat ſown in the *Spring*, ripened about *fourteen Days* later, than that ſown in *October*.

His Lordſhip has been ſo kind, as to order his Steward to *repeat* this Experiment this Year, and has condeſcended to promiſe me a Report of the exact Produce, Time of ſowing, and condition of the Land,—which under his Permiſſion, will appear in my next Year's Report.

The next, and laſt Article, which I had the Honour to receive Inſtructions from the Society to try Experiments upon, was *Barley*.

For this purpoſe I had not a piece of Ground in ſuch Order, either as to its *Quality*, or *Tilth*, as I could have wiſhed, by many Degrees; the beſt I had, having been a *Clover-Lay*, broke for *Fallow* in *Auguſt*, 1763; which lay all the ſucceeding

ceeding Winter, certainly very much to its Benefit.

This Field was plowed once again, in the *Spring*, before I received any Inſtructions from the Society; and ſoon after once more, for the Experiments on *Barley*.

Thus it had the Benefit of a *Winter Fallow* and *three Plowings*; beſides that of being *Harrowed* after the ſecond Plowing.

Be it noted, that at the *third* Plowing, one Acre of this Field was thrown into *Ridges* of *five feet Breadth*, in the ſame Manner as thoſe already deſcribed for the *Turneps*.

The latene*ſ*s of my Inſtructions, added to many unavoidable Impediments, prevented my ſowing this Ground 'till the 17th, 18th, and 19th of *May*; which I found was by much too late; however on the 17th and 18th, I ſowed ſix Acres, in the Common or *Broad-Caſt* Way, with *one Barrel* of Seed to each Acre, and harrowed it in; and on the 19th, I ſowed the one Acre before-mentioned, with the *Drill Plow*, two Drills *ten Inches* aſunder on the Middle of each Ridge, with *four Stone and a half* of Seed to the *Acre*.

The Difficulties which I had to encounter afterwards, were the *Crows* and *Weeds*. The *Crows*, at this Seaſon of the Year, are very bold, from the great Scarcity of Food there then is for them; and they did conſiderable Damage to the Crops; particularly that in *Drills*; for where they pulled up the Corn, there were no neighbouring Plants to extend their Branches and Roots to occupy the Spaces, as there was in the *Broad Caſt* Way: Yet the Damage would have been much more, had I not kept a Man with a Gun conſtantly in the Field.

The *Winter Fallow* greatly meliorated and improved the Ground, but did not deſtroy the Weeds, as the Addition of a *Summer Fallow*, for which I intended this Land, would have done. Under theſe Circumſtances, I was greatly diſtreſſed with *Thiſtles* in *both* the Crops; but in the *Drills* more than the other; the *Horſe-Hoeing* giving every Fibre of their Roots freſh Nouriſhment; which added new Vigour to their Growth, altho' I was frequently *Hand-Weeding* them from the *Barley*.

On the *ſecond* of *July*, I *Horſe-Hoed* the *Drilled Barley* for the firſt Time, by taking off each ſide of every Ridge as cloſe to the Plants as could be.

This was a total Deſtruction to all Weeds on the *outſides* of every *Row* of *Barley*, but the *internal* Intervals I was obliged to Weed by Hand. On the *twelfth* of *July* I *Horſe-Hoed* it *again*, by turning back a Furrow to each Side of every Ridge. The Vigour which this *Hoeing* gave the Plants, afforded me great Pleaſure. On the *firſt* of *September*, I gave it the *laſt Hoeing*, which was no more than to throw the Remainder of the Mould, out of the Furrows, up to the Plants; which brought the Ridges into their original Form, and left the Furrows fair and clean.

I have often heard great Accounts of the extraordinary Produce of *French Barley*; and, after waiting a conſiderable Time, acquired my intended Importation of a little of it: With this I ſowed five of the Ridges of the *Drilled* Acre, on the 19th of *May*.

The Weather being very *dry* for ſome Time after theſe Crops were ſown, they both came up *late*: Upon their approaching to Maturity, they looked tolerably well; but, upon cloſely examining them, they were not ſo *ſtrong* and *thick*, as I have had, and have often ſeen: The Ears were *ſhort*, and the Grains were *ſmall*.

The *Broad-Caſt* was thin in many Places; and the *Drills* failed, in ſome Places a Foot, and in others a Yard: This laſt muſt have ariſen from the *Crows*, as we cannot err in dropping the Seed regularly with the *Drill Plow*, when once it is ſet to Work. Perhaps in the *Broad-Caſt* it might be ſown a little thinner in one Place, than in another. Add to this, that ſome Plants, in both the Experiments, were cut off by the *Red-Worm*; and they would have ſuffered much more, had we not on the 23d of *June* had very fine Rain, which ſtopped the Progreſs of theſe deſtructive Inſects, as I find *Rain always does, provided it is ſufficient to penetrate the Ground.*

From the Time of *ſowing*, to the 23d of *June*, we had *dry* Weather, except that for *ſeven* of the intervening Days, we had a few light Showers; which were of no Uſe. This *dry* Seaſon was much againſt theſe Experiments.

The Land in which theſe Crops were ſown, is upon a *Lime-Stone* Quarry, in ſome degree inclinable to a *Loam*, tho' not ſufficiently ſo, to prevent its *incruſting* by dry Weather: It is tolerable good Ground in *Nature*, very proper for *Wheat*, but not ſo fit for *Barley* as I could have wiſhed, and without *Manuring*, would not bring Turneps to any degree of perfection, I having ſown ſome in the ſame Field laſt *June*, to try the Quality of the Land: This is a good *Criterion*, by which to try Ground for *Barley*; and perhaps from thence has ariſen the Cuſtom of *Barley* following Turneps, which is an unexceptionable good Practice: For, where Land will bring a good Crop of *Turneps*, a plentiful Crop of *Barley* may be expected, provided the Seaſon be favourable.

It ſhould be obſerved, that the Land for theſe Experiments was not *Manured* at all.

On the 3d of *October*, I began to *reap* theſe Crops, a very late Seaſon, but that muſt be charged to the late *ſowing*, and *dry* Weather, which followed *that*.

The *ſix Acres* of *Broad-Caſt*, produced *fifty four Barrels*, *ſeven Stone and four Pounds* of ſaleable Corn, which is at the

Rate of *nine Barrels*, *one Stone and three Pounds* for every Acre.

THE *Drilled* Acre produced of the *French* and *Common* Barley together, *eight Barrels*, *two Stone and four Pounds*, which is *leſs* than the *Broad-Caſt* by *fourteen Stone and thirteen Pounds.*

THUS we ſee, upon the face of the Experiments, that the produce of the *Broad-Caſt* is ſuperior to the *Drilled* by near a Barrel; but out of that we are to deduct the original ſaving of Seed at the Time of ſowing the Drilled Acre, which was *eleven Stone* and *ſeven Pounds*, which brings the produce, near to an equality with an Acre of the Broad-Caſt Crop.

| | B. | S. | P. |
|---|---|---|---|
| One Acre of the Broad-Caſt Barley, produced | 9 | 1 | 3 |
| One Acre of the Drilled, produced - | 8 | 2 | 4 |
| In favour of the Broad-Caſt | 0 | 14 | 13 |
| Deduct for Seed ſaved in ſowing the Drilled | 0 | 11 | 7 |
| Still in favour of the Broad-Caſt | 0 | 3 | 6 |

Hence we ſee, that in fact the *Broad-Caſt* produced only three Stone and ſix pounds more than the *Drilled*.

However, neither of the Crops are what they would have been, had they been ſown in proper Ground, and in due Seaſon; and therefore I look upon neither of the Experiments as concluſive by any means, as to which is the preferable Method of ſowing Barley.

One Circumſtance I ſhould not omit to mention, whch is in favour of the Drilled Crop, *viz.* That the Land, after taking the Crop off, was in a much finer ſtate for Wheat or any other Crop, than it was at the Time of ſowing the Barley;* whereas the Ground upon which the Broad-Caſt was ſown, was by many degrees worſe. It is true the Horſe-Hoeing is ſomething to be added to the Account of Expence, which was four Shillings and four Pence, for Men's Hire,

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* The Ground upon which the Broad-Caſt Barley grew, is now the 25th of *July*, under Oats, and the Acre which was Drilled, is under Wheat, the excellent Appearance of which, I attribute to the Horſe-Hoeing the Crop of Drilled Barley.

excluſive of two Horſes; but that will be amply repaid by the ſucceeding Crop. To this may be added, that at leaſt half that Expence was ſaved in the difference of reaping the Drilled Acre, and an Acre of the Broad-caſt.

THE *French* Barley did by no means anſwer my Expectations, the Ear was ſhorter conſiderably than the other, but indeed the Grains ſtand much cloſer together; it is very flat in the Ear, and is good Corn. Perhaps it would have ſucceeded better, had it been ſown earlier, and on rich Land.

SOME of the Drilled and Broad-Caſt Barley was ſmutted; a Diſtemper to which all the Bread Corns are liable, but in Truth the cauſe of it, ſeems to have baffled the Enquiries of all Naturaliſts, who have attempted to examine into it; and altho' many Perſons have wrote upon it, and *almoſt* every one thinks his Theory concluſive and inſtructive, yet I have generally found them miſtaken.

VARIOUS Motives, Superſtition, Avarice, the pleaſure of writing, or the ſpirit of Contradiction have influenced the Sentiments of many, without having that due regard to the *honeſt purpoſe of writing*, which every Writer ſhould obſerve; and in Truth they ſeem to be as much unacquainted with the *real cauſe* of the Diſeaſe, as I candidly profeſs myſelf to be; I wiſh to be underſtood, to mean with any degree of *certainty*, for I am not without my *Theory*, as to the cauſes and remedy of this Diſeaſe as well as other Perſons, but I diſown the Motives which have manifeſtly influenced the Sentiments of many of the Writers whom I have read.

THE moſt Candid, leaſt poſitive and ſuperſtitious, *manifeſtly enquiring after the Truth*, are the Modern *French Writers*, whoſe diſtintereſted Labours, and ingenious Obſervations in Huſbandry, have more Merit, than all the ſix ſcore Volumes I have before me, and do no leſs Honour to their Country, than to themſelves. Yet, in almoſt every Author ſomething is to be found worthy of Praiſe, but that is too often ſhaded by their Pretenſions to too much. I would be underſtood *not* to include Mr. *Tull* and Doctor *Home* in the bulk of Writers, their Labours are well entitled to the Attention and Praiſes of every ingenious Man.

I ſhall probably in ſome future Paper trouble the SOCIETY and the Publick, with my Ideas on this Diſtemper, which can be founded upon Conjectures only, but by comparing them with the Obſervations of the moſt ingenious Men on this ſubject, I think they carry a Complexion of Probability: But from an abhorrence of poſitiveneſs, I wiſh always to preſerve a diffidence, which I hope will protect me from Cenſure, in a Subject, which can be diſcourſed upon, only on Principles founded on Theory and Conjecture.

## *Experiments on* BURNET.

Burnet has been lately introduced in *England*, as an artficial Paſture for Cattle in the Winter, and I find by the *Muſeum Ruſticum*, has very much engaged the Attention of the Publick.

It is a Native both of *England* and *Ireland*,* there are many Species of it, which, now it is likely to be introduced as a Winter Paſture for Cattle, is the Foundation of Diſputes amongſt the preſent Writers, reſpecting the diſtinct Species cultivated by Mr. *Rocque*, but upon the whole, it ſeems to be, the *Great Meadow Burnet.* Moſt of the other Species, according to *Miller*, are Exoticks.

A Member of the Society, who had purchaſed ſome of the Seed of Mr. *Rocque*,

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* I ſaw many native Plants laſt Summer, which were found in *Rathfarnham* Park; and the Root of one of them, which was at leaſt two Feet long, over and above a long Piece, which plainly appeared to have been broken off by the Workman in the digging it up.

*Rocque*, did me the Favour to give me a Pound of it laſt *April*, part of which I ſowed in the following Manner, on the firſt Day of laſt *May*.

### *Experiments.*

No.

11, One Perch in the Broad-Caſt, or Common Way of ſowing.

12, One Perch in Drills, *one Foot aſunder.*

13, One Perch in Drills, *two Feet aſunder.*

14, One Perch in Drills, *three Feet aſunder.*

22, Sown on the 15th of *June*, one Perch ſown in Drills, *three Feet aſunder.*

In about fifteen Days after ſowing, the Plants began to appear, each throwing up two ſmall Lobes or Leaves, rather round.

On the 25th of *Auguſt*, ſome of the Branches began to Bloſſom, ſome of them Red, and ſome rather of a Yellow White.

From Mr. *Rocque*'s Account of the Plant, I expected to have ſaved ſome Seed from it, but in that I was diſappointed; tho' there did form a little, but the Quantity was ſo ſmall, that it was not worth Attention. He ſays it forms Seed the firſt Year; perhaps the Seaſon was too Wet and Cold for it. I had alſo an Objection to the cutting of it, as I was very deſirous to ſee how it would ſtand the Winter, when grown as mine was.

All the care I beſtowed upon the Broad-Caſt, was to pull up any Weeds that grew high amongſt it; and the Intervals between the Drills I dug with a Spade, as a Subſtitute for the Horſe-Hoe, which could not be introduced in ſuch ſmall Experiments.

All the Plants grew very well, and are now the twenty ſecond Day of *February* very fine green Herbage.

I find the Broad-Caſt is a little Yellow in the lower Fibres, the one foot Drills the ſame, only in a leſs degree; the two feet Drills are ſtill leſs affected, but the three feet Drills ſcarce at all, and the Plants are very green, and ſtronger than any of the preceding.

This ſeems to ſhew that ſingle Drills, with three Feet Intervals is the beſt Culture for it, but Mr. *Rocque* ſays, as I am informed, it ſhould not be ſown in Drills; urging, that in that poſition it runs upon the Ground, and does not riſe perpendicularly; however, I do not find that to be the Caſe ſo much as I expected from this Report: The Plant is naturally very buſhy, and throws out an infinity of Branches and Leaves, which naturally keeps the lower ones down. Certain it is, that my three feet Drills are much the beſt, for the Broad-Caſt is lodged, and is much cloſer to the Ground than the Drilled, and therefore retains the Wet more, which accounts for its being injured in the Colour. Notwithſtanding this, I ſhall not venture to determine, whether in Drills or Broad-Caſt, be the beſt Culture for it.

THAT which was ſown in *June*, is not ſo high, nor ſo ſtrong as the three feet Drills firſt ſown, but is near equal to the two feet Drills, and is ſuperior to either of the other two Experiments.

I think it a Graſs which merits great Attention, for it has preſerved its Verdure all the Winter, and has not received the leaſt Injury from the Froſt and Snow we have lately had, which was pretty ſevere for the Time it laſted. A few Mornings ſince, I walked out pretty early to examine it, when the Froſt was hard, and the Burnet covered with Snow; with a Broom I beat off the Snow, and the Plants were as erect, and retained their Verdure as perfectly as in *September* laſt. Hence I have not a doubt, but it will be a great Acquiſition to the Farmer and Grazier, when it comes into general Uſe.

I have this Day, i. e. the 22d of *February*, cut ſome of it, which I gave to my Sheep, Black Cattle and Horſes, and they all eat very eagerly of it. I ſhall immediately ſend to *England* for the Seed of it, and ſhall extend my Experiments upon it this Year, and hope in my next Year's Report to give a pretty full Account of it.

### *Experiments on* Lucerne.

THE ineſtimable Value of this Plant has been ſo much ſpoken of by all the ableſt Writers on Huſbandry, that it is quite unneceſſary for me to ſay any thing in its Recommendation.

Here follow my Experiments upon it this Year.

No.
15, Sown in Drills, *three Feet* aſunder.
16, Sown in Drills, *two Feet* aſunder.
17, Sown in Drills, *one Foot* aſunder.
18, Sown in the Common, or Broad-Caſt Way.

I ſowed the Seed for theſe Experiments on the firſt of *May*, but the middle of *April* would have been a more proper Seaſon.

THE Lucerne began to appear on the eighth Day; in its firſt Appearance, it has two very ſmall Leaves of an oval form.

Theſe Experiments were treated in the ſame Manner as the Burnet.

On the ſixteenth of *Auguſt*, I cut the Lucerne of each Experiment, and the Produce of Green Fodder was as follows:

Number 15, i. e. The *three feet* Drills, produced off *one Perch, thirty one Pounds and a Quarter.*

Number 16, i. e. *The two feet* Drills, produced off one Perch, *forty four Pounds and an Half.*

Number 17, i. e. The *one foot* Drills, produced off *one Perch*, *forty three Pounds*.

Number 18, i. e. *The Broad-Caſt*, produced off *one Perch*, *fifty nine Pounds*.

Upon the face of theſe Experiments, the *Broad-Caſt* has the greateſt Produce. Above the *three feet* Drills 27 Pounds and three Quarters; above the *two feet Drills*, 14 Pounds and an Half, and above the *one foot Drills* 16 Pounds.

Hence it may be concluded by Perſons not acquainted with the Nature and Culture of this Plant, that the Broad-Caſt ſowing is to be prefered, as yielding the greater Produce, but I think that Concluſion ſhould not be too *haſtily* drawn, for the following Reaſons:

These Crops are all from the firſt cutting after ſowing the Seed, and therefore the Lucerne in the *Broad-Caſt*, was then as good, or probably better, than it will ever be again in any ſucceeding Crop, the Ground being looſer and fewer Weeds in it, than there ever can be hereafter; for the natural Graſs is already riſing in it, altho' it was managed in the way practiced by Mr. *Rocque*; which is to Harrow, or Rake the Ground after cutting the Lucerne. Another reaſon is, that for the firſt Year, the Plants are in their Infancy, but in three Years, I apprehend the *Drills* will more than treble their Produce, whereas at that Time I ſhould fear the *Broad-Caſt* would be quite or near deſtroyed by the natural Graſs. In other Words, as faſt as the Drilled Crops improve, I do conceive the Broad-Caſt will diminiſh.

THE Culture of Lucerne in Drills, with Intervals of only one Foot, I find is no better than the Broad-Caſt, as there is no ſuch thing as Horſe-Hoing between the Rows, and where the Crop ſhould be large, Digging would be too expenſive.

BUT upon the comparative Experiment, between the two and three Feet Intervals, I confeſs I cannot ſo readily pronounce: The two Feet produce the moſt, by thirteen Pounds and a Quarter; whether that diſtance will continue to do ſo, I cannot ſay; it may happen, that when the Roots become large, which is the propereſt Time to aſcertain the Fact, that the three feet Drills may have the greater Produce, but Time alone can determine this Point, which really is very material to know.

## *Second Set of Experiments on* Lucerne.

These Experiments were calculated to diſcover how far the Roots of this Plant would bear being wounded, as in the Culture of Lucerne, practiced by Mr. *Rocque*; I do conceive many of the Roots muſt be injured, to the manifeſt Diminution of the Crop.

In *April* 1763, I ſowed a little Lucerne in my Garden. *May* the firſt, 1764, I treated ſome of the Plants in the following Manner, after thinning of them in the Row, by taking all others from them, and leaving the Plants ſingle, and about two Feet aſunder.

No. 1. The Root of this Plant I ſplit from the Crown of it downwards, for about an Inch.

No. 2. The Root of this Plant was ſplit firſt in the ſame Direction as the former, and then I ſplit it tranſverſely, for about an Inch downwards.

No. 3. The Root of this Plant I cut a Slice off one Side, about an Inch long, juſt below the Crown of the Root.

No. 4. This Plant I cut the whole Crown of the Root off.

No. 5. This Plant I ſplit the Root of, in the ſame Manner as No. 1. and then cut about an Inch and an Half off one Side.

After wounding theſe Plants, I dug the Earth round them, in order to feed the fibrous Roots to the Nouriſhment of the Plants.

THEY never afterwards made any Figure. Towards *September*, No. 1, 2 and 3, threw out a few weak Stems not worth Notice, but No. 4 and 5, never grew afterwards.

THESE Experiments I mean to repeat in a greater Number, and that for two or three Years together, before I ſhall venture to draw *poſitive* Concluſions from them: But I think theſe ſeem to prove, that Mr. *Rocque*'s Method is not to be preferred ſo much beyond *Tull*'s, *Duhamel*'s and M. *De Chateau Vieux*, as his Advocates would inſinuate.* But the fair Tryal between *his* Method and the *Drill*, will be to experiment carefully upon them for four or five Years together; my Experiments in wounding the Plants, being only calculated to ſupport Theory by Facts, for my Notion of the Conſequences which muſt happen from his Culture, is no more than Theory.

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* See Muſeum Ruſticum, Letter 81, fol. 339. VOL. I.

'Till I made this Set of Experiments, I confeſs I never was ſenſible of the Texture and Firmneſs of Lucerne Roots, which are really very hard to cut, and not much unlike a dryed Stick, which I muſt confeſs ſeems to favour Mr. *Rocque*'s Method, ſo far as relates to my Apprehenſion of the Plants being wounded by his Inſtruments, which, from the hardneſs of the Roots, cannot wound them in the Manner I did mine with a Knife. And as my Purſuits tend only to diſcover the Truth in Matters of Huſbandry; for Mr. *Rocque*'s Honour, and my own Credit, I could not omit to communicate this Remark, as I hope the Reader will believe I am endeavouring to aſcertain the beſt Culture for Lucerne, and not writing to leſſen Mr. *Rocque* or his Syſtem: Every Man acting in a private Capacity, has a right to adopt ſuch as he pleaſes, but I, who am acting in a great Meaſure for the Publick, think myſelf bound to be conſcientiouſly exact in my Scrutiny of every Syſtem, which I ſhall comparatively experiment upon. If I am miſtaken in the

Culture of Lucerne, I have the Satisfaction of conſidering ſome of the greateſt Men, who have ever wrote upon the Subject, are no leſs miſtaken than I am.

Notwithstanding all that has been ſaid by many Writers on Lucerne as to its Tap-Roots, yet I find it has many lateral Ones, and it is only a few of the Plants that ſend down but one Tap-Root, but an infinite Number in all Shapes and Directions. At a year Old, I find the healthy Ones, are from ten to eighteen Inches long, I preſerve them of that Age now by me, and intend every Year to take them up, in order to have them of all Ages, the better to ſee their Progreſs from Year to Year.

Upon the *firſt* of laſt *May*, ſome of my Lucerne which was ſown the Year before, was eighteen Inches high, but let it be obſerved, that it had the benefit of a South aſpect, aided by the Reflection of a Fruit Wall. This induces me to believe, that a declivity with a South aſpect, will be the moſt advantageous Situation for this Plant, in this Country; for, altho' Lucerne will live in the ſevereſt Winters, yet it flouriſhes beſt under the influence of a warm Sun; the only bleſſing we ſeem to want in this Country.

In the Summer Months I obſerve, in a good Soil, and under proper Culture, it grows about an Inch in twenty four Hours; ſometimes I have known it grow an Inch and a Half in the ſame Time.

### *Third Set of Experiments on* Lucerne.

The tranſplanting Lucerne, ſeems to have been firſt thought of by the ingenious and never ſufficiently to be praiſed *M. De Chateau Vieux*, whoſe reaſons for every new attempt are founded upon ſuch ſolid and rational Principles, that they have generally ſucceeded to his Expectations. This Gentleman ſays, Plants of two or three years Old, may be planted equally well with thoſe of one year Old.

My Plants laſt *April* were all one year old, which, upon taking up for the Purpoſe of tranſplanting, I found differed very much in their Size; which induced me to divide them into three Parcels, i. e. the ſmalleſt, middling and largeſt. Theſe I tranſplanted in the following Manner, *ſix Inches* aſunder in the Rows, and the Rows three Feet.

No. 1. Forty of the ſmalleſt Plants, with their Tap or leading Roots cut off.

No. 2. Forty of the middling Plants, with their Tap or leading Roots cut off.

No. 3. Forty of the largeſt Plants, with their Tap or leading Roots cut off.

No. 4. Forty of the middling Plants, *without* cutting their Roots.

No. 5. Forty of the largeſt Plants, *without* cutting their Roots.

No. 6. Forty of the ſmalleſt Plants, *without* cutting their Roots.

THESE ſix Rows of Plants were put down the 28th Day of *April.* I watered them at the Time of putting down, and once afterwards.

VERY few of them died. So that the different Sizes and Methods ſeem to anſwer equally well the firſt Seaſon.

I intended to have cut the Produce of each Experiment for weighing, but a few Days before that was to be done, my Horſes got into the Place where it grew, and eat ſome of it, which diſappointed my Purpoſe. From the Appearance of the Experiments reſpectively, there would have been very little, if any difference in the Produce; but a third and fourth Year's Crops, will aſcertain how far cutting off the Tap Roots will benefit the

Plants, and how far tranſplanting is preferable to Sowing. Be it noted, that the tranſplanted Roots make no great figure the firſt Year.

In order to aſcertain with ſome degree of certainty, how far Lucerne may be worth the Farmer's Attention, I laſt Summer made an Experiment with an Horſe, to diſcover how much he would eat, which being known, we can from the firſt Set of Experiments pretty exactly tell, how many Horſes an Acre of Lucerne will maintain during the Summer Months. The Horſe I choſe for this Purpoſe is a very large One, he had been Plowing from ſeven o'Clock in the Morning, 'till ſeven in the Evening, during which Time I forbid his having any thing to eat. When he was taken out of the Plow, I ordered him into a Stable by himſelf, where I had provided for him *fifty ſix Pounds* of Lucerne, without any other Food for that Night, of which he had eat by next Morning, *forty nine Pounds*; a Quantity, which I own ſurprized me.

Lucerne will in this Country, in favourable Seaſons, Mow four Times in a Summer after the firſt Year, and we may ſafely calculate, that at every cutting, it will yield *half an hundred Weight* upon each Perch, which at the four cuttings, is *two hundred Weight* upon a Perch in the Seaſon, or *ſixteen Tons* upon an Acre, i. e. 35,840 Pounds. This is a low Calculation, but at this Rate, ſuppoſe *five Horſes* to be allowed, *forty nine* Pounds every twenty four Hours, which is *two hundred and forty five Pounds*, in that Caſe an Acre will maintain them *one hundred and forty ſix Days*, which is twenty Weeks and ſix Days. No Man will contend for it I believe, that any *natural Paſture*, will do any ſuch thing. Add to this Profit, the circumſtance of making Dung all the Summer; an object, I am ſorry to obſerve, not ſufficiently attended to in this Country, amongſt the common Farmers; if they can make a little for their Potatoes, they ſeem to think of no more.

Lucerne ſhould never be ſown upon wet or ſpungy Ground, but upon dry rich Land, and muſt always be kept free from Weeds.

I ſowed ſome laſt *April* in *Drills*, upon Ground not ſix Inches deep, above a Lime Stone Quarry, and it grew very luxuriantly, but the Soil is very good.

Turneps are the beſt preparation of Ground that I know of for Lucerne, particularly if they be raiſed in Drills, in the Manner before repreſented.

My Lucerne in the Broad-Caſt and one Foot Drills, was infected with the Ruſt or Mildew, during its growth; this ſeems to be an Objection to the ſowing of it with ſuch narrow Intervals, or in the Broad-Caſt Way, ſince the two feet, and three feet Drills were in the ſame Place, and they were not at all infected with this Diſeaſe.

## RED CLOVER.

THIS is a Graſs of very general Uſe, and will grow upon almoſt any Ground, except that which is wet, but the *abundance* of the Crop, depends upon the *quality* of the Land, and the Seaſon.

FOR the firſt Time in my Life, I ſowed a little laſt Year in *Drills*, *three feet aſunder*, on the firſt Day of *May*, without any Corn with it. In *Auguſt* following, I cut one Perch of it, and the Produce Green, weighed *one Hundred Weight and a Quarter*, i. e. 140 Pounds; a Quantity which I confeſs ſurprized me; but producing ſuch an abundance the firſt Year of Sowing, and that at one cutting; what muſt be the Produce the ſecond and third Years, upon good Land and in favourable Seaſons? when it will cut at leaſt twice, if not three Times in a Summer: I am willing to believe at leaſt, *three hundred Weight* upon a Perch, which would be *twenty four Tons upon an Acre*.—If ſo, Lucerne I am afraid will never come up to it;

but this opens a Field for Experiments, not only for an Improvement in the Culture of Clover, but alſo for comparative ones between that and Lucerne.

LEAST any one ſhould be induced, from what I have ſaid, to expect abundant Crops of Clover by Mowing, I beg leave to premiſe; that when it is ſown upon poor Land, with a view to improve it, the Clover ſhould never be mowed. But where it is intended to be made into Hay, it muſt always be ſown upon good dry Land, in which Caſe it will be very profitable, if the Summer be not too dry.

## *The Native, Strawberry Trefoil.*

I come now to ſpeak of a Plant, which, from what I did with it laſt Year, ſeems to claim very ſerious Attention. The firſt Time I ever took Notice of it, was in the County of *Meath*, upon a Bank of Lime Stone Gravel; this induced me to look more carefully after it, and after ſpending a great deal of my Time, I collected about a quarter of a Pound of the Seed, concluding that a

Plant which ſhews ſuch natural Luxuriance in its wild State, muſt make a great Figure under a Culture equal to its own Bounty.

I obſerve where it is crowded by common Graſs, it is in no Proportion equal to what it is, where a Plant happens to be alone.

THIS Graſs, or rather permit me to call it Acquiſition, I found in my Searches after other Graſſes, of which I have made a pretty good Collection in their Seeds, and ſhall in due Time, make my Experiments upon them.

THE Plant now before us, is a *Trefoil*, which I find in *Miller*'s Garden Dictionary, being one of the twenty five Sorts he deſcribes, and is by him called, No. 5. *Trifolium Fragiferum*, or *Strawberry Trefoil.*

MILLER ſays it is a Native of *England*; what I have before ſaid, proves it alſo, to be a Native of *Ireland.* He ſays it is often preſerved in Botanick Gardens for Variety.

The Bloſſom or Flower of it, very much reſembles a Strawberry, only that it is much leſs, and from thence takes its Name of Strawberry Trefoil.

The Seed before-mentioned, I collected in 1763, and on the firſt of laſt *May*, I ſowed one Perch of Ground with it in Drills three Feet aſunder, which came up in about eight Days. It grew very faſt, 'till at laſt, it covered the whole Ground, and appeared to have been ſown in the promiſcuous Way.

I intended to have let it ſtand, to ſee if it would ripen the Seed (which I believe it would not have done the firſt Year) but the Horſes which got into the Lucerne as before-mentioned, alſo injured this. Provoked at its being disfigured, I ordered it to be cut; 'till then I had no Conception of its Quantity, the Mower could ſcarcely turn it with his Scythe, it was ſo ſtrong, heavy, and ſo much entangled.

The Produce of this ſingle Perch Green, was *one Hundred Weight and three Quarters*,

*ters*, i. e. 196 Pounds, a Quantity which I think very great

I have this Year collected about three Quarters of a Pound more of the Seed.

The Ground I ſowed it upon was very well reduced, and manured with Dung.

I flatter myſelf it will mow twice the ſecond Year, but how long it will grow, I cannot yet tell.

I had a natural Plant which ſprung up in my Orchard laſt Summer, which ſome worthy Members of the Society ſaw meaſured, from the extreme Point of one Branch, to the extreme Point of the oppoſite one, *ſeven Feet*. But when it is ſown together, the Branches are ſo entangled, that it is hard to meaſure them.

If any Gentleman, into whoſe hands this Report may fall, ſhould have this Plant abound upon his Land, I ſhall think myſelf highly obliged to him, if he will order the poor Women of his Neighbourhood to collect the Seed, and for their Trouble I will give them a *Guinea a Pound* for *five Pounds*, provided any Gentleman, who may be ſo indulgent as to take this Trouble upon him, will *inſure its not being mixed with other Seeds.* The Seed to be ſent to Mr. *George Faulkner*, in *Dublin*, where the Money will be paid upon the above Conditions.

I had a Variety of other ſmall Experiments depending laſt Year, but the Accident before-mentioned, of my Horſes getting amongſt them, diſappointed my Enquiries.

## MISCELLANEOUS PAPERS.

Since the *Muſeum Ruſticum* was undertaken, I have now and then ſent a Paper to be inſerted in it, and as I find ſome Gentlemen, who are Encouragers of the Undertaking I am engaged in, propoſe to begin the Culture of Lucerne, I have added to my Report a Letter of mine on that Subject, containing the beſt Method of ſowing Lucerne, which I am at preſent acquainted with, for the Information of them and others, who may be inclined to propagate this Plant. And as the *Muſeum Ruſticum* may not be in the hands of every Perſon who may happen to read this Report, I ſhall add another Paper of mine, with the material Anſwers to it, as I hope they will be uſeful to this Kingdom; and this I do with the more Pleaſure, as I have been deſired by ſeveral Members of the Society, to inſert the Papers I have ſent to the above Work, but ſome of them I have omitted, as not being neceſſary to this Kingdom.

A Letter to the Editors of the *Muſeum Ruſticum*, on the Culture of Lucerne. No. 78, Page 268. Vol. 2d.

Gentlemen,

A few Days ago I received your firſt ſix Numbers of the *Muſeum Ruſticum*.

I perhaps may be liable to cenſure for ſaying, I wiſh the Letters of your different Correſpondents had Merit equal to the good Intentions, which I am willing to believe, moved their Authors to write them.

A Work of this kind will certainly be uſeful in many Particulars, but if contradictory Letters appear; the poor Farmer, who is intended to be inſtructed, will be at a loſs how to make his Choice: And yet I fear that Inconvenience will often ariſe, to the Confuſion of the Farmer, whom you intend to inſtruct, and who is already ſufficiently prejudiced againſt Books, to the no ſmall Check of landed Improvements.

THERE are many of your Correſpondents who ſhew their Ingenuity and Attention by the judicious Obſervations they appear to have made: I wiſh they all wrote from the ſame Fountain, and as ſincerely, that I had leiſure to point out ſome of their Miſtakes.

AT preſent I ſhall confine myſelf to the Letter No. 81, Page 339, Vol. 1ſt. The Author of this Letter, if he meant to furniſh us with a Panegyrick upon Mr. *Rocque*, might have done it without contradicting firſt Principles, which will ever ſtand the teſt of experimental Enquiries.

Mr. *Miller*, will perhaps anſwer for himſelf. The Superſtition of the *Romans* in the Cultivation of Lucerne, if we may believe Tradition, renders their Method unworthy the Practice of the preſent Æra. This Gentleman, Page 339, owns he is againſt Innovations in Huſbandry, becauſe it is difficult to bring the Farmer from the old Methods; and therefore ſeems to conclude, new ones are not to be attempted; at leaſt that ſeems to be his reaſon for being againſt what he calls Innovations.

UNDER "*Reſtrictions*, &c." he approves of the new Culture, but thinks it "*preposterous* to extend it to artificial Graſſes," adding "the *only* benefit Lucerne can "receive from the Horſe-Hoe, is, that "it keeps down the natural Graſs." This Gentleman cannot be a practical Cultivator of Lucerne, neither can he know the uſes of the Hoe Plough; if he did, he could not aſſert a Fact ſo contradictory in itſelf!

To inaccurate Obſervers, the *ſeedling* Plant of Lucerne may appear to have no *lateral* Roots; but a careful Examiner will find a great Number of ſmall ones, every one, or moſt of which, are furniſhed with freſh Nutriment by the Operation of the Hoe-Plough.

We ſhall not contend about Mr. *Rocque*'s ſuperior Profit: His Situation gives him Advantages ſuperior to a diſtant Reſidence; and therefore that ſhould not be mentioned by a generous Writer.

I am a Favourer and Practicer of the new Huſbandry; and I do deny that it will be more expenſive than Mr. *Rocque*'s Method in the Culture of Lucerne, but on the contrary it will eventually be cheaper.

By his Method, he may for a few Years, have pretty good Crops; but at length his Plants will be found to dwindle, and his

Crops will leſſen, unleſs he annually adds Seed to the Ground; whereas, in the new Culture,* the Crop will be continually improving: As to the quality being inferior, that will be the fault of the Owner, if he lets it grow too rank. This Argument of your Writer, makes againſt himſelf, as thereby he admits the ſuperior Luxuriance of the Plants cultivated by the Horſe-Hoe.

I have ſown Lucerne in Broad-Caſt, more than once, and have ſeen others do it, and it ever failed.

Mr. *Rocque*'s Rule, as this Gentleman ſays, is, "that Lucerne will grow on any "Land, if not wet," this is certainly premature; it ſurely muſt have the occupation of a dry rich Soil, or I am ſure from Practice it will not ſucceed; and as to "to the ſtrongeſt being preferred," I believe every one who tries the Cultivation of it on ſuch, and upon light

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* To have given its Author his due Praiſe, I ſhould rather have called it, the *Tullonian* Culture.

Ground, will find the latter beſt adapted to it.

But the Notion of ſowing Corn with Lucerne, is quite as "*Prepoſterous*," I think, as the new Culture for it; and how a Man of Mr. *Rocque*'s famed Abilities ſhould adopt ſuch a Method, I am at a loſs to gueſs. Neither ſhould Lucerne be ſown in *March*, as in its infant State it is very tender and timid of Froſt.

This Gentleman ſays, "it is for want "of knowing the nature of Lucerne that "*they* Drill it." I might retort upon him; but his miſtaken Zeal, I fear will more injure the Cauſe he means to promote, than I hope it will diſcourage the Practice of Drilling this valuable Plant, as, by all Men who adhere to rational Principles, *that* hath been found the moſt ſucceſsful Method. See *Tull*, *Duhamel*, &c. I ſhould be glad to know what, "the Surface of the Ground is to "be ſpared" for, is it to give Life to the natural Graſs, that common and deſtructive Enemy of this excellent Plant?

Our Author mentions the Cultivation of it in *France*, &c. If he was ever at *Paris*, with his preſent Attention, he muſt have ſeen in the Neighbourhood thereof, that after a few Years, they always plough up the promiſcuous ſown Lucerne, in order to prepare the Ground, for that or ſome other Crop, when the Lucerne begins to dwindle by the Weeds, or natural Graſs robbing it of its Nutriment.

How much more muſt that be the fate of promiſcuous ſown Lucerne in theſe Kingdoms? where he admits Graſs is apt to get a Head. That is not the Caſe in *France*, and yet even there, promiſcuous ſown Crops are ſhort lived.

I know not whether he be as converſant with the Potatoe Tillage in *Ireland*, as I am; but for your Information, Gentlemen, in Conſequence of your Note, Page 344, I cannot omit to inform you, the Tillage will not do for Lucerne: For this Plant the Ground ought to be well pulverized; whereas in the *general* Potatoe-Tillage of this Kingdom, not more than about two Feet in Nine of the Ground is cultivated.

THE Manner of Harrowing the Lucerne practiſed by Mr. *Rocque*, altho' the Teeth of the Inſtrument be round, muſt wound many of the Roots: That might be well, as it would thin them; but repeated Harrowing will in Time wound them all; and notwithſtanding they will afford Graſs afterwards, yet, when the Winter Rains come on, lodgments of Water will be made in thoſe Wounds, which will bring on Putrefaction, to the Deſtruction of the Plants; unleſs Mr. *Rocque* has the Art of conducting the Harrow-Pins always in the ſame Direction: And could that be the Caſe, what would deſtroy the Graſs where they did not paſs?

THE Manner of plowing the Lucerne, practiſed by Mr. *Rocque*, is ſtill approaching the Horſe-Hoe, tho' by no Means ſo effectual. I wonder to ſee our Author even favour that, ſince it may be deemed an "*Innovation*," this Plowing is to be repeated every Year, and Harrowing alſo: To this Dung is to be added, "*as often as may be*," I am willing to believe this Gentleman knows nothing of the Expence which attends theſe Operations, i. e. Plowing, Harrowing, and, above all, Dunging, beſides the value of the Dung which would always be acceptable to other Grounds; whereas, in the *Drill* Way of ſowing Lucerne, when the Land is once put in good Order, it may ever be kept ſo by the Hoe-Plow.

LUCERNE is a Graſs of ſuch ineſtimable Value, that it will anſwer almoſt any Expence, yet, if the moſt certain Method to obtain Succeſs ſhall be found the cheapeſt, there can be no reaſon for purſuing one more precarious and more expenſive, which will be found when Mr. *Rocque*'s Method, or at leaſt that ſo warmly recommended by your Correſpondent, who aſſerts it to be Mr. *Rocque*'s, is compared in *Practice* with the one I venture to recommend to the Practice of my Countrymen, which I take upon me to ſay will command Succeſs, if purſued.

The Land ſhould be a flexible Loam, dry, deep and rich, either by Nature, or made ſo by Art; not but it will ſucceed to Admiration ſhould a Quarry be under. It ſhould be well pulverized by Plow and Harrow, laid as flat as poſſible, and cleared of all Weeds, particularly Couch-Graſs: When the Ground is in this form, let a ſmall Plow with two Mould-Boards, be run up and down the Field, at every three Feet, upon the flat Surface; This will completely form Ridges of three feet Broad. If a pair of Drill-Harrows be not at hand, let the Crown of every Ridge be carefully raked clean and even with an Iron Rake, and one row of Seed drilled very thin about half and Inch deep, along the middle of every Ridge, the middle or latter end of *April*, (the Beginning of *May*, may do) and be carefully covered. This ſowing of the Seed may be done by Hand, if a

Drill-Plow be not ready. By a Maſter's Attendance, a great deal may be done in a Day.

Thus it may remain 'till Weeds begin to appear, when the Hoe-Plow, or a ſmall common One, ſhould take away every alternate Side of the Ridges, as near the Lucerne, as can be with ſafety. (I go within two and three Inches of my Drilled Crops) In three or four Days, return the Mould to the former Places with the Plow, and then proceed to take off the other Sides of the Ridges in like Manner, and return the Mould as before.

If the Ground be brought into good Condition before ſowing, a Crop may be mowed in *July*, the Produce of which will ſurprize any one who is not acquainted with the Plant.

In *September*, it will be fit to cut again; but if in the intermediate Time Weeds ſhould appear, let the Hoeing be repeated:

peated: Thus the Weeds will be deſtroyed the firſt Year.

AFTER the ſecond cutting, ſend in the Plough again, and take off the Sides of every Ridge within about ſix Inches of the Plants, and ſo let them remain 'till *February*, when the Plough ſhould return the Mould to every Ridge; and in *May* the Graſs will be ready for cutting, and will continue to afford a Crop every Month during the Summer.

THE Hoeing ſhould be repeated as before directed, as often as Weeds appear, but obſerve never to Horſe-Hoe it, when the Ground has any Adheſion.

THE Hoeing before the Winter is to keep the Plants dry during that Seaſon, and to meliorate the Soil of the Alleys by the influence and mechanical Operaration of the Winter Froſts.

YOUR Readers will pleaſe to obſerve, that after the firſt preparation of the Ground, if they Horſe-Hoe it regularly every Year, the Dung which Mr. *Rocque*'s Friend recommends, (as it may be got eaſily at *London)* may be ſaved for other Purpoſes, as by this Method of managing Lucerne, the *Crop* and Ground will be improving every Year.

I appeal then to every impartial Judge, whether this Method is not cheaper than the Ploughing, Harrowing and Dunging, ſo warmly recommended by your Correſpondent. It is almoſt unneceſſary to urge, that a Crop raiſed in this Way will, ever after the firſt Year, be equal, if not ſuperior, to Mr. *Rocque*'s, as the Gentleman admits as large Crops may be raiſed in the Drill Way.

I am a Stranger to Mr. *Rocque* and his Friend, I have no other Motive in troubling you on this Subject, than to prevent the Publick being miſled, and a Gratitude to the memory of Mr. *Tull*, whoſe ſuperior Ingenuity, I bluſh to own it, hath ſhone in *France*, to the Reproach of *Engliſhmen*. And were we all to join in Opinion with your Correſpondent, (who ſays) “ it would be well were we “ to improve our old Practices, before “ we *even attempt* to bring the new Ones “ into general Uſe.” We ſhould indiſcriminately merit the pity of all Nations for our Perverſeneſs. Perhaps had Mr. *Tull* been a Foreigner, his Syſtem would have been eſtabliſhed amongſt us long ago.

It may be proper to inform you, Gentlemen, that I am not a Farmer in Theory, but in Practice, although I purſue it ſpeculatively, in many Caſes, before I extend it. And if I find your *Muſeum* that unintimidated Receptacle which I hope it will appear to be, by giving a place to the Memory of the ingenious *Tull*, I ſhall perhaps be able to furniſh you with ſome uſeful Matter: But reſt aſſured, nothing ſhall approach you from me which does not ariſe from Practice. Garrateer Farmers are injurious to the Cauſe they would be thought to promote; though, when the Bookſeller pleaſes, they carry their own Point, as my Shelves evince.

I am, &c.

IRELAND,
*April* 24, 1764.

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To the Editors of the *Muſeum Ruſticum*,
No. 24, Page 113, Vol. 3d.

GENTLEMEN,

WHEN I wrote to you a few Days ago upon the Culture of Bere in *Ireland*, I had not leiſure to touch upon the Subject which is the foundation of this Letter, and which I now trouble you with, not from any Merit that I would be thought to arrogate to myſelf, but really with a deſire of being well informed of a Fact, which I think is of great Importance for all Mankind to know, at leaſt all ſuch as are concerned in Country Affairs.

We are too apt to pay but little Attention to the Calamities of others, until they come home to ourſelves; then it is that our feelings are touched, our Minds are awakened, and we are eager for Information how to remove the Evil which attends us: Whereas, did we ſympathize more with the Misſortunes which attend our Neighbours, we ſhould have a better chance of removing the like Evils, when they approach ourſelves.

It is univerſally known that *Red Clover* is a dangerous Food for Horned-Cattle; and particularly, when under heavy Dew or Rain, it is a deſtructive Poiſon. In the laſt Spring I felt the effect of it by an Accident, having loſt a Bullock, which I valued very highly for his good qualities in Labour, by his eating Clover; and when I came to him I felt the Loſs the more, for the Ploughman who uſed to follow him, was ſtanding by him, who, upon ſeeing me, with Tears in his Eyes, ſaid, "Ah, "Sir, there he lies! the beſt Companion "that ever poor Man followed." I found amongſt the other Cattle which were in the Field, three Cows alſo affected; thoſe I ordered home, and the reſt to another Paſture. My Prime Miniſter, (the Shepherd) knew of no Remedy but that of driving them about, which I complied with, as it appeared to me rational enough; however, as the Cows were near their Time of Calving, that could be done but ſparingly.

I knew it to be a Practice in *England*, in the like Caſes, to paſs a Knife into the Animal's Body; but neither my Shepherd, or any one elſe could inform me, in what part the Inciſion ſhould be made, to give vent to the pent up Air. In this Situation I reproached myſelf ſeverely for concluding every body knew what I find they do not, which, added to my never having met with the like Accident before, made me negligent as to informing myſelf of the Operation: and altho' this affair happened near four Months ago, I have not yet met with one Perſon who can tell me; tho' many Gentlemen,

tlemen, upon its being firſt mentioned, ſay it is common; but when puſhed to explain it, my Enquiry is diſappointed.

But to return to my Cows; thus I was obliged to leave them for the Night, directing the Shepherd to ſit up with them, with orders to call me, ſhould they be worſe; accordingly about three o'Clock I received his Summons, when two of the Cows were better, but the third he was ſure would die.

The Creature appeared to be extremely ill, ſwelled to a great degree indeed: Two large Arteries, paſſing from the lower points of the Shoulders along the Neck, beat in a ſurprizing Manner; two Veins, paſſing from the under Side along the Belly, were as turgid as Ropes, a very high Fever with a wild Gazing and Diſtention of her Eyes. But what caught my Attention moſt, and which at that Time appeared unaccountable to me, was her being much more ſwelled on the near, or left Side, than on the other,

i. e. on the near Side of the Back-Bone, there was a riſing conſiderably above the Back of the Beaſt. I was ſurprized to ſee Air fluctuating within her Skin, ſtill ſeeming to diſtend her more and more.

Upon preſſing my Fiſt ſmartly in the Cavity between the Hip-bone and Ribs on the near Side, I did imagine I could feel the Paunch, or great Receptacle of the Inteſtines, diſtended to this immoderate Size.

Of this Fact I wanted to be ſatisfied, being myſelf unacquainted with the Anatomy of the Parts: I therefore went to a Butcher, who anſwered my Queſtions to a Confirmation of my former Imaginations; upon which I returned with a determined Reſolution of paſſing a Pen-Knife into that part of the Cow, about three Inches below the Back-Bone, and about four Inches from the point of the Hip-bone; but in my return, I conſidered the Cow as ſhe really is, a valuable one; and as I knew not how the Blood-Veſſels lay, I own I began to have ſome doubts how to proceed; upon which another Experiment occurred to me.

I have by me (and which no Gentleman or Farmer ſhould be without) a Pewter Syringe, which holds three Quarts.

For the uſe of my Family and Cattle, I generally keep by me an Aſſortment of Drugs and Medicines. I examined my Stock, and found I had Carraway Seeds, Juniper Berries, Bay-Berries, Camomile Flowers, and Coriander Seeds: Of theſe in my Hurry, I took a handful of each, not regarding the Weight; the Seeds I bruiſed in a Mortar, and with the Flowers, threw them into three Quarts of Water, which I reduced to two by boiling, then ſtrained it, and diſſolved in it, of Glauber's Salt, and Common Salt half a Pound of each: To this I added near a Pound of Butter, as a Subſtitute for Oil, (which I had not) and half an Ounce of Chymical Oil of Aniſeed.

Making this compoſition of a proper Warmth, I injected the whole into the Cow by way of Gliſter.

She very ſoon began to emit great Quantities of Wind, which infected the whole Cow-Houſe and Yard, in which the Aromatics were diſtinguiſhable enough; and in about two Hours, ſhe was as well as ever ſhe was, and ſoon after brought me a fine Calf, which I am now raiſing.

I do not offer this as a Remedy that can be *practiſed* in general, unleſs People will be careful to keep the Materials by them, and above all the Syringe, which is abſolutely neceſſary for Horſes and Black Cattle, in many Caſes, beſides the one before us.

I know not whether my Ideas be right; but I take this effect of Clover upon Black Cattle to ariſe from a Fermentation, which, I preſume, is excited by the conſtruction of their Inteſtines, or from ſome thing peculiar in their digeſtion: We know that Fermentation will excite Air, and, I conceive, the Animal heat rarefies that Air, to the great diſtention which we ſee thoſe Animals will ſwell to, even, as I am told 'till they really burſt.

I have before ſaid, this Remedy is not offered as a general or certain one; but I am moved to offer it, with a hope that ſome capable Perſon will furniſh us with an accurate Information of the Operation by the Knife, as I know it is practiſed in *England*, with certain Safety and Succeſs: And here I call upon ſuch of my Countrymen as are acquainted with it, in the name and behalf of the Publick, (in which I hope Gentlemen you will join me) that ſome of them will inform us in what Part of the Animal's Body they enter the Knife, and whether they find it neceſſary to paſs any Tube in afterwards, to keep the Orifice open for the freer Paſſage of the Air; as, in tapping for the Dropſy, a Tube is left in the Wound, by which the Water runs off.

I am warm, Gentlemen, in my Deſires for this Operation being univerſally known, as it is, in Truth a Matter of great Conſequence, particularly as the uſe of Clover is encreaſing every Day; and when it appears in your *Muſeum*, I ſhall take Care to propagate it here for the Benefit of this Kingdom.

Since I ſaved the Cow, which is the Foundation of this Letter, I have loſt one by another Accident. I moſt carefully opened and examined her Inteſtines, and I find that the Paunch lies on the near Side, juſt as I imagined; and I am ſo well ſatisfied of the Safety, that if I ſhould be ſo unfortunate as to have any Cattle in the ſame Situation, before I ſee my Requeſt complied with by ſome generous ſpirited Correſpondent to your Work, I ſhall, without fear, proceed to paſs a Knife juſt in the Place I deſcribed before; But I do not recommend it to any other Perſon, 'till they have practical Authority, which will, in all Caſes, be ſuperior to any Theory.

I am, *&c.*

IRELAND,
*Auguſt* 18, 1764.

THE Queſtion I propoſed in this Letter, I have the Pleaſure to ſee anſwered, by ſeveral Gentlemen, the *Heads* of which, ſo far as *relate to the Subject*, follow here.

A Letter to the Editors of the *Muſeum Ruſticum*, on ſtabbing Cattle hoven by eating Clover. No. 53, Page 231, Vol. 3d.

" GENTLEMEN,

" I take Notice, in your laſt for *Sep-*
" *tember*, of a Letter from a Gentleman
" in *Ireland*, wherein he requeſts any
" Perſon that has tried the Experiment of
" the Inciſion-Knife, to relieve Cattle
" that are hoven or ſwelled with eating
" Clover, to give a particular Account of
" that Operation.

“ I had a yearling Steer in that Con-
“ dition about a Year and a Half ſince:
“ I ſent for a Farrier as ſoon as I per-
“ ceived it; he drenched him, and drove
“ him about for ſome Hours, without
“ giving him any Relief: He ſtill grew
“ worſe, and the Man could do no more
“ for him,* and I believe he would have
“ dyed ſoon, having almoſt loſt his footing.

“ I then reſolved to try the Experiment
“ of giving vent to the Wind by an In-
“ ciſion.

“ I took Notice (as the Gentleman
“ obſerves) that he was particularly ſwel-
“ led and puffed out between the Ribs
“ and Pin-Bone, on the near Side. I
“ gave the Farrier a thin Inciſion-Knife,
“ not ſharp pointed, but a little round
“ at

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* I do not wonder the Farrier could do no more, for upon Earth, there is not, I believe, ſuch another Set of ignorant People; and they are ſo fortified with Impudence and Importance, that they will attempt any thing, to pick a Gentlemans Pocket; which I have often experienced to my great Loſs. I could relate ſuch Facts of their Ignorance and Superſtition, as have really afforded me great Diverſion, even, tho’ my Cattle were dying before my Face, ah! eight able Horſes in a Week.

" at the Point, and made him cut through
" the Hide about an Inch long down-
" wards, where the ſwelling was moſt,
" (having firſt properly ſecured him
" from moving) about three Inches
" from the Rib, and the ſame from the
" Bones of the Loin; then I directed
" him to make another Inciſion with
" the utmoſt Caution, that it might only
" enter the Cavity of the Belly, without
" hurting or wounding any of the Inteſ-
" tines, as I believed that would be fatal
" to the Creature.

" The Orifice was not bigger than the
" Top of a little Finger would enter, but
" immediately upon making it the Wind
" ruſhed out, with as much force as if it
" came from a Bellows, and was very
" fœtid; it continued ſo for ſome Time,
" and the ſwelling leſſened by Degrees.

" We afterwards run a Needle with
" Thread through the Wound in the
" Hide, tied it together, putting a Plaiſ-
" ter on it to keep the Air from it,* put
" him into a warm Houſe, and the next
" Day

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* I do not apprehend the Plaſter was neceſſary.

" Day he eat ſome Oats and Hay, and
" in a Week's Time we healed up the
" Wound, and turned him out with the
" other Cattle; and though he did not recover
" himſelf in ſome Weeks, he is
" now as fine a Steer as any of his Fellows.

" I made uſe of no Tube to keep the
" Orifice open."

I am, *&c.*

A DOVONIAN.

" *October* 22d. 1764."

Another Letter on the ſame Subject, from the Rev. Mr. *Wallis.* No. 66, Page 301, Vol. 3d.

" GENTLEMEN,

" HAVING ſeen in your uſeful Monthly
" Collection, a Gentleman's great Deſire
" to know whether it were altogether
" ſafe to Tap any of the Black Cattle
" that are much ſwelled,* either from

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* This Gentleman ſeems to have miſtaken me, ſince in my Letter I ſaid, " I know it is practiſed in " *England* with certain Safety and Succeſs."

" eating too greedily of Clover, or from " any other accidental Cauſe, I thought " it my Duty to communicate to you, " both for the Satisfaction of that " Gentleman, and likewiſe for the future good of others, my little Experience in that Way.

" About two Years ago I had a fine " Calf, near four Months old, which " ſwelled all over its Body to ſuch a " Degree, that I hourly expected its " Death, owing, I believe, to its lying " wet.* This Swelling, however, was " with great difficulty carried off by " giving it internally warm and laxative " Medicines.

" After this I ſent it to Graze with " my Friend, Mr. *Gregſon*'s Calves. It " had not been long there, when that " Gentleman ſent me Word the Calf was " greatly ſwelled, and in all probability

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* This ſeems to furniſh us with a Caution, which I have often thought not ſufficiently attended to: Namely, that of keeping our Cattle dry.

" muſt die very ſoon, except immediate
" Relief could be procured.

" I forthwith ordered one of his Men,
" upon ſeeing the Diſtreſs of the poor
" Creature, to run his Pen-Knife, as
" deep as he could, through that Part
" of the ſwelling which riſes higheſt near
" one of the Hip-Bones, and to put into
" the Orifice, the Barrel of the largeſt
" Quill that could be got, in order to
" carry off the pent up Wind.

" This having been done, the Wind
" ruſhed out with a ſurpriſing Force and
" offenſive Smell; and that none of this
" putrid Fluid might be left behind, we
" preſſed its Sides together as cloſe as
" poſſible.*

" The Calf found immediate Relief,
" drank its Milk, eat ſome Hay heartily,
" and continued well 'till a fall of Rain,

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* I do not conceive the preſſing of the Sides could be of any Uſe, for I ſhould apprehend the Ribs of the Animal muſt give ſuch a Reſiſtance, as to render the preſſure ineffectual.

" made the ſwelling return, which induced me to Tap it again; and it " mended.

" THREE Times after this, upon catching Cold, it ſwelled, and was tapped, always receiving ſudden and ſurpriſing Eaſe.*

" UPON this I had a Vein opened, and " the Blood was, as I expected, thick, " and had ſcarcely any *Serum* in it, " reſembling that of a Perſon in an " Ague, hence I thought a Fellon-Drink,

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* This ſeems to be as ſtrong a Recommendation of this Practice, as we can poſſibly wiſh for; for from this Gentleman's Account, this Calf ſeems to have been tapped *five Times*, with Succeſs; and what ſeems to render the Practice worthy of the Farmer's Attention, is, that this Calf did not ſwell from eating Clover, but from ſome *other* Cauſe, and therefore the Remedy ſeems to be more *extenſively* uſeful, than I imagined, when I firſt made my Enquiry after it. And I cannot omit to ſay, that I think myſelf, and the Publick, much obliged to Mr. *Wallis*, for his very explicit Information, upon this Subject.

“ ſuch as is generally uſed,* would carry
“ off the Diſtemper altogether.

“ Such a one I made, and gave it; “ and the Calf has never had any Return “ of the ſwelling ſince. It is now big “ with Calf, and I truſt will turn out a “ very fine Cow.”

I am, *&c.*

RICHARD WALLIS,

Curate of Carham.

Carham,
*October* 30, 1764.

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* I will write to Mr. *Wallis*, to know the Compoſition of his Fellon-Drink, which I ſhall inſert, in my next Year's Report, as I preſume he will anſwer my Letter.

Another Letter on the ſame Subject, to the Editors of the *Muſeum Ruſticum*, No. 79, Page 347, Vol. 3d. from the Reverend Mr. *Comber*.

" GENTLEMEN,

" As your Correſpondent, an *Engliſhman* reſident in *Ireland*, calls in the " Name of the Publick, upon ſuch as " are able to give an Account of the " Operation of ſtabbing hoved Beaſts, " a *ſafe* and *certain* Remedy for a Diſ- " temper (without it be very dangerous) " I thought myſelf able to tranſmit a " ſatisfactory Relation of what is practi- " ſed in this Neighbourhood, with con- " ſtant Succeſs.

" THOUGH the Operation itſelf is " well known here to almoſt every Far- " mer, yet I reſolved not to content " myſelf with an Account of this; but " to acquaint myſelf with the *rationale* of

“ it, by converſing with an eminent
“ Chirurgeon, on the Subject.

“ By his Aſſiſtance, Gentlemen, I am
“ able to anſwer the Enquiry of your
“ Correſpondent, and yourſelves, as fol-
“ lows:

“ 1ſt. The *Engliſhman* is very right
“ in his Conjecture, that the Pen-Knife,
“ is to be run into the Part which he
“ deſcribes. If he would be very accu-
“ rate,* he muſt direct it into the moſt
“ prominent Part, as he will, in that
“ Caſe be in leaſt Danger of wounding
“ improper Parts.

“ 2d. He muſt take Care to have his
“ Pen-Knife as ſharp as poſſible; for it
“ has not only the Hide of the Beaſt
“ to

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* I hope my ſetting this Enquiry on foot, is a Proof that I wiſh to *be ſo*; and if Mr. *Comber* had read my Letter with the ſame Attention with which I did his, he would have found, that I had examined the Inteſtines of a Beaſt on Purpoſe to ſee how they lay, and that I was then ſatisfied no Danger could enſue by the Inciſion, there being no “ improper “ Parts,” to Wound.

" to paſs through, but a very tough
" Part of it, as is obvious to any one
" who barely knows the Joints of a Beaſt
" in the Shambles. *

" 3d. THERE is no Danger of wound-
" ing any large Blood Veſſels there, the
" Parts being of a tough Nature, in ſo
" much that few People like to eat
" the Flank except of a *young* and fat
" *Beaſt*.

" 4th. THE Paunch is wounded by
" the Pen-Knife, and a ſmall Orifice
" is ſufficient to give vent to the con-
" fined Air, without the help of any
" Tube,

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* Every Man who has the Philoſophy of Mr. *Comber*, knows, that when any Membrane, be it ever ſo tough, is ſtrained and diſtended, that it will receive a Puncture or Inciſion much readier, and eaſier, both to the Subject and Operator, than when it is in a flexible or relaxed State; as the Surgeon he conſulted could have informed him, in the Caſe of Phlebotomy, where a Bandage is generally uſed, to fill the Veſſels and ſtrain the Skin, before the Puncture is made.

" Tube,† as we know that the Puncture
" of a Pin will ſink a full blown Blad-
" der.*

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† The Fact may be ſo, but I muſt confeſs it ſeems not quite ſo clear a Point to me, and we find in the preceding Letter, Page 131, that Mr. *Wallis* thought a Tube neceſſary, by his uſing a Quill.

* This will readily be admitted, but I hope Mr. *Comber* will pleaſe to conſider, there is a great Difference between the Teguments of a Bladder, and thoſe of a Beaſt's Hide and " Flank," (if the Part I deſcribed be the Flank) and that the Parts of the latter, will be much more apt to cloſe up a ſmall Orifice made in the Beaſt, than thoſe of a Bladder, will the Puncture of a Pin. Beſides, Mr. *Comber* will pleaſe to recollect, that the external Preſſure of the Atmoſphere which lies upon the inflated Bladder, contributes much more to the Expulſion of the Air, and therefore to the Diſtention of the Puncture in the Bladder, than it can poſſibly do on the Air in the Beaſt; for although the Column of the Atmoſphere lying upon the Beaſt is much greater, than on the diſtended Bladder, yet the Wind in the Beaſt is greatly defended from that proportionable Preſſure, by the Back-Bone and Ribs of the Animal, and therefore it ſeems clear to me, that the Uſe of a Tube will be an Improvement to the Operation I ſought after.

" 5th. When the Diſcharge of the " Wind is made, the Parts of the " Paunch *collapſe*, and the Lips of the " Wound, come *in contact*, and unite " gradually by that *wonderful Oeconomy* " *of Nature*, which is known to ſubſiſt " in the Caſe of Wounds in general.

" 6th. A Plaiſter, which will ſtick " around the Edges, is to be applied to " the Wound in the Hide, as ſoon as " the Diſcharge is made, to promote " and ſecure the healing; and the Beaſt " is to be kept ſome Time warm, and " treated with gentleneſs.

" It ſeems evident to me, that this " Operation muſt be a much better Re- " medy than any Injection by the Syringe; " becauſe the Tendency of all ſuch " Injections being to rarefy the Air " ſtill more, when the Parts are much " ſwollen already, there muſt be great " Danger of their burſting in a vital

"Part.* But, of this, Gentlemen, I "leave Phyſicians to judge, content to "have given you, and the *Engliſhman*, "ſuch an Account of the Practice you "enquire after as may be depended "on."

I am, *&c.*

THOMAS COMBER, Junior.

East Newtown,
*October*, 23d. 1764.

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* I am willing to think with Mr. *Comber*, that this Operation is better than Injections, but not for the ſame Reaſon that he does, but becauſe it is a Remedy in every Man's Hand, when he knows it.—In the Caſe of my Cow, none of the Symptoms Mr. *Comber* apprehends from the Injection did appear, and really, if this Remedy was ſo dangerous as he ſeems to apprehend, the Phyſician would often loſe his Patients, when thoſe Injections happily ſave them, in many Caſes, ſuch as Cholicks, Flatulency, *&c.*

Another Letter on the ſame Subject of ſtabbing Cattle hoved by Clover, with Cautions on the Subject. To the Editors of the *Muſeum Ruſticum*, No. 90, Page 372, Vol. 3d.

" Gentlemen,

" A Neighbour of mine had a Bullock " under this Diſtemper; he came to me " for my Advice: The Ox was ſo bad " and blown up, he could not ſtand.

" I took a ſharp pointed Pen-knife, " and fixing my Eye on the moſt prominent Part of his Belly, thruſt the " Blade through the Integuments quite " into the *Abdomen*:* There iſſued out " a great Guſt of Wind very fœtid, " with ſome Water of a reddiſh Colour: The Bullock ſeemed eaſier, but " far from well, for the Wound preſently

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* This Gentleman ſhould have deſcribed the Part, as that was my Enquiry, but I conclude it muſt have been where I deſcribed, as all the other Gentlemen, who anſwered my Enquiry, agree in that Particular.

“ ſently cloſed up, and admitted no more
“ Air to eſcape;† ſo that I was under
“ a Neceſſity of ſtabbing him twice
“ more in different Parts of the Belly,§
“ before he was thoroughly relieved,
“ which, by the help of a Glyſter after
“ the laſt Stab, was preſently brought
“ about;* and here give me Leave,
“ Gentlemen, before I leave this Subject,
“ to give a few Cautions to thoſe who
“ may be under the Neceſſity, one Time
“ or other, of performing this very uſe-
“ ful Operation.

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† This is a Proof that Mr. *Comber* too haſtily determined againſt the Uſe of a Tube, and I am a little ſurprized this Gentleman omitted the Uſe of one, as from his Manner of Writing, he appears to me to be a Surgeon.

§ I am at a Loſs to judge from theſe Expreſſions, where this Gentleman could ſtab the Bullock, if not in the Place I deſcribed, for in no other could he ſo certainly wound the Abdomen, by which I preſume he means the Paunch, and in which, is ſeated the Complaint.

* Here is another Proof in Aid of mine, that Mr. *Comber* ſeems to have drawn his Concluſion too haſtily againſt the Uſe of Glyſters in Caſes of Flatulency.

" FIRST, if it be performed with a
" Pen-knife, not to be fearful in puſhing
" in the Blade a proper length, 'till
" you find Wind iſſue out; for if the
" Wind, be in the Cavity of the Belly,
" you cannot poſſibly hurt the Gut,§
" the whole Body of the Wind being
" between you and it, which no reaſonable
" bladed Pen-knife can touch, and
" if the Wind ſhould be pent-up in the
" Inteſtine, you muſt penetrate it before
" the Beaſt can be relieved.†

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§ This ſeems not to be clear, but I apprehend he means the Paunch, as to wound the ſmall Guts would be dangerous to the Beaſt, and I am perſuaded ineffectual in removing the Complaint.

† I confeſs this is not clear to me, but ſeems to be contradictory.—If the *whole Body* of the Wind be between the " Gut" (Paunch he means I believe) and Skin, there can be none in the Paunch.—But it will always be found *in the Paunch*, and no unnatural Quantity between the Skin and Paunch, but from eating improper Food. Perhaps from other Diſeaſes that might be the Caſe, but it is rather improbable;—but in the firſt Caſe it may be relied upon from my own Examination of the Inteſtines and Teguments of the Paunch, that *no Danger* can enſue, by wounding it, *and which muſt* be done to afford Relief to the Animal, in the Caſe before us.

“ To this laſt perhaps it may be ob-“ jected, that we run the Hazard of “ killing the Beaſt by wounding the “ Gut; but I am far from thinking ſo, “ as I have ſeen many Wounds of the “ Inteſtine, both in Man and Beaſt, “ very happily cured.

“ ANOTHER Caution is, that where “ theſe Wounds are made in the Belly, “ with a proper Pen-knife, it is not “ adviſeable to have them ſown up; for “ where there is a continual Motion or “ Action, as there is in the Muſcles of “ the Belly and Parts adjacent, ſuch a “ Practice is not only unwarrantable, “ but cruel.

“ MY laſt Caution and Advice is, that “ upon all theſe Occaſions, when the “ Beaſt is relieved of this Wind, a pro-“ per Glyſter ſhould be thrown in im-“ mediately, as hot as he can bear it; “ theſe Glyſters ſtrangely relieve them, “ by acting as a warm comforting Bath,

" both to their diſtempered Bowels, and " emptying the ſame of the Load of " Muck within them."

I am, *&c.*

G. B.

Isle of Ely,
*December* 15, 1765.

By the Favour of the Noble Lord mentioned in the preceding Part of this Work, I had the Pleaſure of being introduced to a Gentleman of the County of *Wexford*, to whom I cannot omit to acknowledge myſelf much obliged, for the fulleſt Information on this Subject, of ſtabbing Cattle, which are ſwelled by eating Clover; and which I ſhall here Communicate, for the Information of the Publick.—This Gentleman has practiced this Remedy for many Years, with certain Safety and Succeſs, upon a great Number of Cattle. He ſays there is not the leaſt Danger to the Beaſt, from the Operation; provided the neceſſary Precautions

cautions are uſed.—He agrees, that the Diſeaſe is ſeated in the Paunch, in Manner before deſcribed; but he ſays, the Inciſion, muſt always be made perpendicularly; for, that if it is made horizontally, the Beaſt will be in Danger, for the following Reaſon. The Paunch is formed of Teguments, like Threads, which run from the Back of the Beaſt, downwards; and that therefore, if the Inciſion be made horizontally, the Paunch can never heal again; as its own gravity, added to that of the Excrement, which at all Times is lodged in it, will ever keep the Wound open: whereas, when the Wound is perpendicular, the ſame Cauſe contributes to the bringing the Lips of the Wound in Contact, and therefore in a ready Poſition for healing: And this he exemplifies, by a Stocking; which being cut acroſs the Thread, and then ſtrained, the Cut will gape; but if it be cut Lengthways, with the Thread, and be then ſtrained, the Cut will hardly be diſcernable. This Argument carries ſuch Conviction with it, that nothing more need be ſaid, to enforce the Practice of that Rule.

The Inciſion is to be made in the Place I have before deſcribed, and without any other Caution, than to direct the Point of the Knife rather downwards; for if it be on the other hand directed upwards, ſome of the Veſſels, or other Parts approaching the Kidneys might be wounded: the Orifice muſt be made fully into the Paunch, after which, if any Obſtructions ſhould ſtop the Wind, the end of a large Quill may be entered, through which the Wind will paſs, and the Beaſt will recover.

I ſhould conceive, if the Beaſt, after this Operation, was kept from Water for a Day, it might be the better.—This Gentleman ſays there needs no Plaiſter.

This Gentleman not only gave me this Information of the Remedy I ſought after, but alſo deſcribed the Manner of preventing Cattle being diſordered by eating Clover—which I ſhall alſo communicate.—He ſays, that when Cattle are intended to be paſtured upon Clover, they ſhould be turned into it, in the Middle of the Day, in dry Weather, when they are full of other Graſs; and let this be repeated for two or three Days, taking them out every Evening; and thus, their Food of common Graſs is to be leſſened, and their Food of Clover encreaſed; 'till in a Week's Time, they may be left Day and Night in the Clover, without receiving any Injury from it.—

THUS I have the Pleaſure to conclude a Subject, which I have been very anxious to make generally known, and feel a Happineſs, in having ſet the Enquiry on foot; as I am ſure the Practice of this Remedy, will be a Means of ſaving many Cattle to poor Farmers, and other Perſons.

THE new and complete Syſtem of Practical Huſbandry, by *John Mills*, Eſq; is juſt come to Hand; and in running ſlightly over his Appendix, I find ſomething upon the Diſeaſe before us; and as it is ſhort, I ſhall beg *his* Leave to abſtract it, for the Benefit of my Readers. —At the ſame Time, I cannot omit to make my Acknowledgments to him, for the great Pleaſure I have received, and which I think every Friend to Agriculture muſt feel, from the Peruſal of his well digeſted Labours.—

He ſays "Clover ſhould, at firſt, be "given ſparingly to Cattle, 'till it pur-"ges them: when it has produced this "Effect, the Danger is generally over; "for the then Liquid Fæces are quickly "expelled, and eaſily give Way to the "ready Evacuation of this juicy Plant, "which might otherwiſe raiſe in the "Bowels that Effervescence which proves "ſo dangerous.

"As ſoon as a Beaſt is hoved, ſome "make it ſwallow a Pound of Oil of "Olives, and then walk it about. But "the moſt frequent, the eaſieſt, and the "readieſt Remedy, becauſe it is found "every where, is immediately to milk a

“ ſound Cow, and make the ſick one “ ſwallow a Quart of the warm Milk; “ then to walk it about ſlowly at firſt, “ and by Degrees to bring it to a pretty “ quick Trot. This generally perfects “ the Cure: indeed, it has ſeldom been “ known to fail. The Cow thus diſordered, muſt not be fed with Clover the “ next Day. Three Pints of Milk may “ be given to a Bullock.” *Memoires de la Société Royale d'Agriculture de Tours, Tom.* 1. *p.* 151.

He adds nothing more on this Subject, except that of doing me the Honour to take an Abſtract of my Original Letter to the Editors of the Muſeum Ruſticum on this Diſeaſe, which I hope will now appear, *atteſted* to his Satisfaction.——

SOME

# ACCOUNT

OF THE

# RED-WORM:

An INSECT which is very Deſtructive to young Corn.

WITH SOME

PROBABLE METHODS to Deſtroy It.

Humbly ſubmitted to the Conſideration of

The RIGHT HONOURABLE and HONOURABLE

DUBLIN SOCIETY.

And now publiſhed at their Requeſt.

By Mr. JOHN WYNN BAKER.

# SOME
# ACCOUNT
# OF THE
# RED-WORM, *&c.*

I Have often *heard* of the Havock which Red Worms make in young *Wheat*, *Barley*, and Oats; and in ſome *few* Writers upon Huſbandry, have *read* of them; but never *ſaw* them 'till *May*, 1764; when, to my great Mortification, in a few Days, they deſtroyed, almoſt totally, *nine Acres* of my *Wheat*; I ſay almoſt totally, becauſe I did not reap above *half* a *Barrel* an *Acre*. This Miſfortune induced me, to propoſe to the Conſideration of the DUBLIN SOCIETY, whether the Offer of a Premium might not probably produce a Diſcovery of ſome effectual Method for deſtroying ſo injurious an Inſect; to the infinite Advantage of the Publick: And the SOCIETY were pleaſed to offer a Premium accordingly.

I now have the Honour to lay before them, what has occurred to me upon that Subject.

THE moſt ingenious *M. De Chateau Vieux*, ſpeaks of an Inſect, which is certainly the *ſame Kind*, if it be not the very Inſect, which I have now under Conſideration. This Gentleman after ſaying "Our Wheat, in the Month of *May*, "1755, ſuſtained a Loſs, which even *that* "cultivated according to the *new Huſbandry* did not eſcape,* Deſcribes the "Worm thus, "We found in it many little "*white* Worms, which afterwards became "of a *cheſnut* Colour. They poſt them"ſelves between the *Blades*, and eat the "*Stems*. They are uſually found between "the firſt Joint and the Roots, every

---

* Mine was alſo ſown according to the *new Huſbandry*.

“ Stalk, which they attacked, grew no
“ more, but became yellow, and withered.
“ The ſame Misfortune happened to us
“ in the Year 1732. The Inſects ap-
“ peared about the Middle of *May*, and
“ made ſuch Havock, that the Crops
“ were almoſt deſtroyed.”

It perhaps might be expected, that this *great* Man, ſhould have made the very Enquiry, which we are now upon; as the Loſs appears to have been very great in *Geneva*, at the two Periods which he mentions: But when we conſider, how much the high Office, which he held in the City, and Republick of *Geneva*,* muſt have engaged his Attention; it is rather aſtoniſhing, that he could oblige the World ſo much as he hath done, by his repeated Experiments in Huſbandry, and his judicious Obſervations upon them: it is therefore leſs to be wondered at, that *this Circumſtance* eſcaped him.

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* Firſt Syndick.

THE ingenious Mr. *Benjamin Stillingfleet* alſo, in the ſecond Edition of his *Miſcellaneous Tracts*, in a Note, Page 175-6, ſpeaks of an Inſect, which is probably the ſame as that which we are ſeeking to deſtroy.

His Words are,

" THUS in *Suffolk*, and in ſome Parts
" of *Norfolk*, the Farmers find it their
" Intereſt to encourage the Breed of
" *Rooks*, as the *only Means* to free their
" Grounds from the *Grub*, from which the
" *Tree* or *blind Beetle* comes, and which
" in its *Grub* State, deſtroys the Roots of
" *Corn* and *Graſs*, to ſuch a Degree, that
" I myſelf have ſeen a piece of Paſture
" Land, where you might turn up the
" Turf with your Feet.

" Mr. *Matthews*, a very obſerving and
" excellent Farmer, of *Wargrove* in *Berk-*
" *ſhire*, told me, that the Rooks one
" Year, whilſt his Men were *houghing*
" a *Turnep* Field, ſate down in Part of it,
" where they were not at Work, and
" that

"that the Crop was *very fine* in *that Part*, "whereas in the *other Part* there were "*no* Turneps that Year."

WE ſee, that M. *de Chateau-vieux* deſcribes this Worm as being firſt *White*, and afterwards becoming of a *Cheſnut* Colour. I have carefully ſought them at different Periods during the paſt Year, but always found them of the *ſame Cheſnut* Colour, never varying in any particular, except that of Size, which I find to be the Caſe at *all* Seaſons, in which I have ſeen them.

THE Inſect which Mr. *Stillingfleet* ſpeaks of, he calls a *Grub*; which, he ſays, deſtroys Corn and Graſs; this induces me to believe, that it is the *ſame* Inſect; (tho' the Report which he relates from Mr. *Matthews* ſeems to contradict it) becauſe I have obſerved, that the *Red* or *Cheſnut* Worm, never appears *voluntarily* upon the *Surface*; but, when the Earth is turned up, either with Plough or Spade, the Rooks and Crows are very bold in their Approach to pick them up; a Circumſtance, which I own has in ſome Degree abated my Enmity to theſe Birds: I therefore never deſtroy nor frighten them off my Land whilſt I am *ploughing* it; but when I *ſow*, when the Corn riſes, and when it is ripe, I deſtroy, or baniſh them as well as I can, becauſe the Miſchief which they do, at *thoſe Times*, is intolerable.

A Member of the *Dublin Society* informed me laſt Summer, that ſome of his Turneps were deſtroyed by a Worm; I had ſome few which decayed in their Leaves, and became of a Lemon Colour, preceding the Putrefaction which followed, and *deſtroyed the* Turneps: I examined their *Roots*, but could not diſcover any Inſect which had injured them, and therefore I cannot pronounce that it is the red Worm which deſtroyed this Gentleman's Turneps; but I ſhall be very watchful with reſpect to this Circumſtance, upon every Opportunity which may preſent itſelf.

I have obſerved my *Lucerne* to decay in its *Top*, ſoon after it has been up; and upon examining the Roots, I have found the *Red Worm*, which had cut them off.

This inſect ſeems to be every where in *Ireland*, called the *Red-Worm*; by ſome of the Engliſh Writers who have ſpoken of an Inſect, which deſtroys Corn in the Manner already mentioned; which I think is undoubtedly the ſame; it is called a ***Grub***, by others the large ***Maggot***, and the *Rook Worm*, becauſe the Rooks eat it; but as none of the Writers have given any other Deſcription of it, than the Name by which they reſpectively call it, I ſhall endeavour to deſcribe it.

RED-WORMS are about half an Inch long, and about one tenth of an Inch in Diameter: They are jointed in their Skins, and are of a very firm Texture: They have many ſhort Legs, two ſmall black Specks, which appear to be their Eyes; and two ſmall Points ſpringing from their Heads, with which I believe they cut the Corn, and which, in that Work I apprehend, act like Forceps: And all that I have ſeen of *this* Species, are of a *bright Cheſnut* Colour. For this Reaſon, I ſhould conceive it would be more deſcriptive, to call them the *Cheſnut Worms.*

When they are expoſed to the Air, by turning up the Earth, which is infeſted with them, they will very ſoon cover themſelves again in the Soil, which they are very capable of doing, by the *Strength* which their *Make* gives them, altho' they appear to be a ſluggiſh Inſect, and have not the Advantage of a *Slimineſs* upon their *Skins*, which the common large creeping Worm has, which enables *that* inoffenſive Worm to penetrate the Earth, and get under Timber, and Stones, with Eaſe.

The *red Worm*, immediately endeavouring to cover itſelf from the Air, is certainly from natural Inſtinct, as it will ſoon die, when expoſed to the Air; as will appear by the Experiment, N°. 10, hereafter mentioned.

THESE Worms deſtroy *Wheat*, *Barley*, *Oats*, and *Lucerne*, whilſt in an *infant* State, in the Months of *March*, *April*, and *May*. Late ſown *Barley* and *Oats*, they will deſtroy as late as *June*. I have not yet experienced, that they deſtroy any other Crops.

THE Miſchief done by them is in dry Weather, Rain ſufficient to *penetrate* the Ground, makes them deſiſt from deſtroying the Corn; and, I ſuppoſe, every thing elſe, which they, at any Time injure.

THEY cut *Wheat* off, juſt above the Crown of the Roots; *Barley* and *Oats* in the ſame Place, but alſo higher up, upon any Part of the Stem, which is below the Surface of the Earth.

THESE Worms ſeem to abound more in Ground which is *lightly tilled*, than in ſuch as hath been *well tilled*; but, in *Lay Ground*, they ſeem to be more numerous than any where elſe: and the Fields upon my Farm, in which I have found them, are *wetter* than other Fields, where they are not; whether *that* Circumſtance contributes to their Encreaſe, I cannot ſay; but the following Experiments prove, that they will live longer in *Water*, than they can, when expoſed to the open Air.

### Experiments on Red-Worms.

No. 1. I put ten red Worms into a *Wine Glaſs* with common Salt in it. They were all dead in *four Hours*.

No. 2. Into a Glaſs with *Brine* in it I put ten red Worms. They were all dead in *ſix Hours*.

No. 3. Into a Glaſs with *Lime* in it, which had been ſlacked for a long Time, and expoſed to the Weather, I put the like Number. They were all dead in *forty four Hours*.

No. 4. Into a Glaſs with the above *Lime*, and ſome *Water* in it, I put the like Number. They were dead in *twenty Hours*.

No. 5. Into a Glaſs with Lime *newly* ſlacked, and *when cold*, I put the like Number. They were dead in *fourteen Hours*.

No 6. Into Lime Water, made with *cold Water*,* I put the like Number. They were dead in *ten Hours*.

No. 7. Into a Glaſs with *Soot* in it, I put the like Number. They were dead in *four Hours*.

No. 8. Into *Soot* and Water, I put the like Number. They were dead in *four Hours*.

No. 9. Into fair Water, I put the like Number. They were dead in *fifty two Hours*.

No. 10. Into a Glaſs without any Thing in it, I put the like Number. They were dead in *thirty two Hours*.

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* Lime Water made for Medicinal uſe, is always made with boiling Water, but as that cannot be in the Caſe before us, I therefore uſed *cold Water*.

By theſe Experiments we ſee all the Articles uſed will kill this Inſect in a ſhort Time; particularly the *Salt* and *Soot*. I thought it neceſſary to conſider different Articles, the better to ſuit different Parts of the Kingdom.

Where Lime can be conveniently had, and that it is uſed as a Manure, I am apt to believe, from the Experiments, that no injury can be ſuſtained from theſe Worms; but I am afraid a *ſmall* Quantity will not effectually deſtroy them; beſides, I ſhould fear, if it were not put on before the *ſowing* of the Corn, that it might ſinge the Blades of the Corn; for, from the Experiments, it appears, that Lime *newly ſlacked*, is more ſuddenly deſtructive to them, than *old* Lime, and therefore it is to be preferred.

Where Lime is uſed for no other Purpoſe, than to deſtroy this Worm, I ſhould conceive, that about *eight Barrels*, regularly ſown by *Hand* on an *Acre* of Ground, might be ſufficient: It muſt be firſt *ſlacked* and *cold* before a Man can poſſibly caſt it upon the Ground with his Hand, Lime being a very ſtrong *cauſtick*; and, even when it is cold, the Man ſhould have a thick Glove upon his Hand.

WHERE *Salt* ſhall be uſed to deſtroy this Worm, it muſt always be ſown upon the Ground, *before* the intended Crop; for, altho' Corn will vegetate, and receive Benefit from Salt as a Manure, when it is uſed *antecedent to the Sowing* the Corn, yet, if it be added *after* the Corn is growing, it will certainly deſtroy it: And therefore, it ſhould never be uſed for this Purpoſe, but *before* the Corn *is ſown*, or at leaſt before it *vegetates*.

I conceive that where Salt is uſed for this Purpoſe only, about *four hundred and an half* to an Acre will anſwer the Purpoſe, which is a Trifle more than *one Ounce* to every *ſquare Yard*.

WE ſee by the Experiment, that *Soot* kills this Worm, as ſoon as *Salt*; and, as in moſt Places it is to be had at a much leſs Price than Salt, I think there can be no Doubt about preferring of it; beſides which, it may be *ſafely* uſed, after the Corn is *up*.

I had ſome ſmall Parcels of Barley under Experiments, which theſe Worms began to deſtroy; and in order to convey the *Soot* as ſoon as poſſible to the Roots of the Plants, I mixed a little of it in Water, and poured it on the Plants with a Garden Watering-Pot; the Conſequence was, that I did not loſe *one* Plant afterwards.

It will hardly be imagined, that I mean, that the ſame Method is to be purſued upon a *whole Farm*: No: the Method I would recommend to the Practice of the Farmer is this; to ſpread or caſt by Hand, as he ſows his Corn, about *ſix* or *eight* Barrels of Soot on an Acre, and let him be careful to chooſe a *calm Day* for the Work, otherwiſe the Wind will carry away great Part of it; and, what remains cannot be regularly diſpoſed; let him be careful to do it *early* enough in the *Spring*, that the Rain may waſh the Soot and convey it to the *Roots* of the Plants, before the Worm begins the Miſchief; if he does this, I am perſuaded his Crop will be preſerved.

We ſee by the Experiments, that this Worm will live longer in Water, by *twenty Hours*, than when expoſed to the open Air, but at length, *i. e.* in *fifty two Hours* they died in the Water; perhaps this might be from the Effect of Drowning; but if ſo, I might have expected they would have been totally deſtroyed in my two Fields in the Winter of 1763 and 1764, by the immoderate Rains which fell at that Seaſon for a long Continuance, by which the Land was often flooded. But they ſurvived that Winter, as appeared by the great Loſs I afterwards ſuſtained, by their deſtroying my Wheat; and therefore, whether Water be an Enemy to them or not, it ſeems not eaſy to determine; but if theſe which died in the Glaſs of Water were really drown'd; yet, I think we may conclude, that Water is neceſſary to their Exiſtence in the Earth, and probably aids them in getting their Food from it; and what ſeems to confirm this Notion is, that when the Land is wet, they *do not* touch the Corn, but as ſoon as ever the Land is dry, they begin their Miſchief. However, this Speculation I muſt ſubmit to the Conſideration of Perſons more capable of diſcuſſing it than I am.

We ſee by the Experiment, No. 10, that they cannot live in the *open Air*; which ſeems to prove, that, where they abound in Land, the oftener it is ploughed, particularly in the Summer, when they cannot penetrate the Ground ſo eaſily as when it is moiſt, they muſt be, by ſuch ploughing, greatly diminiſhed; beſides which, the frequent ploughing gives the Crows more Opportunities of picking them up, in which, as I before ſaid, they are very watchful.

Frequent ploughing has been recommended by ſome Writers, as the *only* Means of deſtroying this Worm; and they have recommended the Ploughs being ſtuck with Nails, urging, that by thoſe Nails, the Worms are cut to Pieces;

others have recommended Walnut Leaves being ſoaked in Water, to ſprinkle the Land; and ſteeping Seed Corn in various Liquors, as infallible Remedies; but ſuch Methods as theſe are founded upon miſtaken Principles; they only miſlead the Farmer, and muſt diſappoint him.

WORLIDGE recommends a ſtrong Lie made of fixed Salts, but that would be impracticable. *Mortimer* recommends Sea Water, for ſuch Lands as are near the Sea Coaſt, which I believe would anſwer very well. He ſays he uſed Soot *once* with Succeſs, but that it did not ſucceed with him afterwards. I am perſuaded he did not uſe the Soot early enough to have it waſhed into the Ground by Rain, or perhaps he uſed too ſmall a Quantity.

I would not be thought to arrogate any Merit to myſelf on Account of what I have here offered, on this Subject, ſince it appears, that other Perſons have uſed the Articles which I have recommended, againſt this common Enemy; but many Perſons have been diſappointed in their Expectations from theſe Remedies, which muſt have ariſen from their either having uſed *too ſmall a Quantity*, or not having obſerved the neceſſary Precautions; if thoſe, which I have recommended, ſhall be put in Practice, and found to anſwer, I ſhall think myſelf amply rewarded.

# Kalendar of the Weather, 1764.

I ſhall now Conclude my Report for the Year 1764, with a Kalendar of the Weather, from *January* the *firſt*, to *December* the *thirty-firſt*, both incluſive, which I have reduced into twelve Tables, one being for each Month; by which at one View, the Changes of the Wind, and Weather in any one, and every Day of the Year may be ſeen, without being confuſed with thoſe of any other Day: The different Weather being reduced into Columns, every one of which are headed with a Title.

## An Explanation of the TABLES.

THE firſt Column is the Month, and the Days of the ſame.

THE four next are for the Wind, and thoſe which follow deſcribe the Weather.

First, the Wind: where this | Mark ſtands *alone*, without one in any other Column for the Wind on the ſame Day, it denotes the Wind to have been *due* at *that Point*, that Day. As for Inſtance, on the 9th of *January*, the Mark will be found *alone* under the *Weſt Column*, which denotes the Wind that Day to have been *due Weſt*.

2d. Where *one* Point of Admiration is added to any Mark of Wind, that denotes *additionally*, that the Wind was *high*; as for Inſtance, on the 4th of *January*, it will be found thus ! | in the Weſt Column, which denotes an *high* Wind to have been on that Day at *due Weſt*. *N. B.* Where the Column for Storms is marked, it was not neceſſary to add the Point of Admiration to the Point of Wind.

3d. Where the Mark for the Point of Wind, has a *Dot* or *Point*, placed by the Side of it, as thus . | that denotes the Winds inclination to ſome other

Point, which will alſo be found marked thus | on the ſame Line *without* a Dot; as for Inſtance, the firſt of *January*, the *South* Column is *marked* and *dotted*, the *Weſt*, *only marked*, which denotes the Wind on that Day to have been *South Weſt*.—On the 17th, by the *ſame Rule*, *South Eaſt*, *and high*. And on the 13th of *March*, *Weſt and by North*.

4th. WHERE the mark of the Wind ſtands in a Column with two Dots as thus · | . that denotes the Wind to have been changeable, but ſettled at laſt to the Point under which the Column is intitled, as for Inſtance, on the 9th of *May* it was *South Eaſt*, but ſettled *due Weſt*.

5th. WHERE two or more Columns are ſo marked, that denotes the Wind due at thoſe Points the ſame Day, as on the 6th of *May*, the Wind blew *due Eaſt* and *due Weſt*; and therefore the two Marks are double dotted.

6th. WHERE all the Columns for the Wind are dotted thus . . | . . | . . | . . that denotes a Calm; as for Inſtance on the 2d of *July* it was Calm, and on the 7th of *Auguſt*; but the *Eaſt* Column on that Day being marked and double dotted, denotes the Wind riſing at Eaſt.

7th. WHERE *one* Point of Admiration is added to the Mark in any Column for the Weather, that denotes an Extreme, as for Inſtance on the firſt of *January* it was very *clear as well as fair.* The 26th of *June heavy Showers*, 23d. *heavy Rain*, and on the 14th of *Auguſt* very *immoderate Rain*, and on the 2d. of *Auguſt* great Storms.

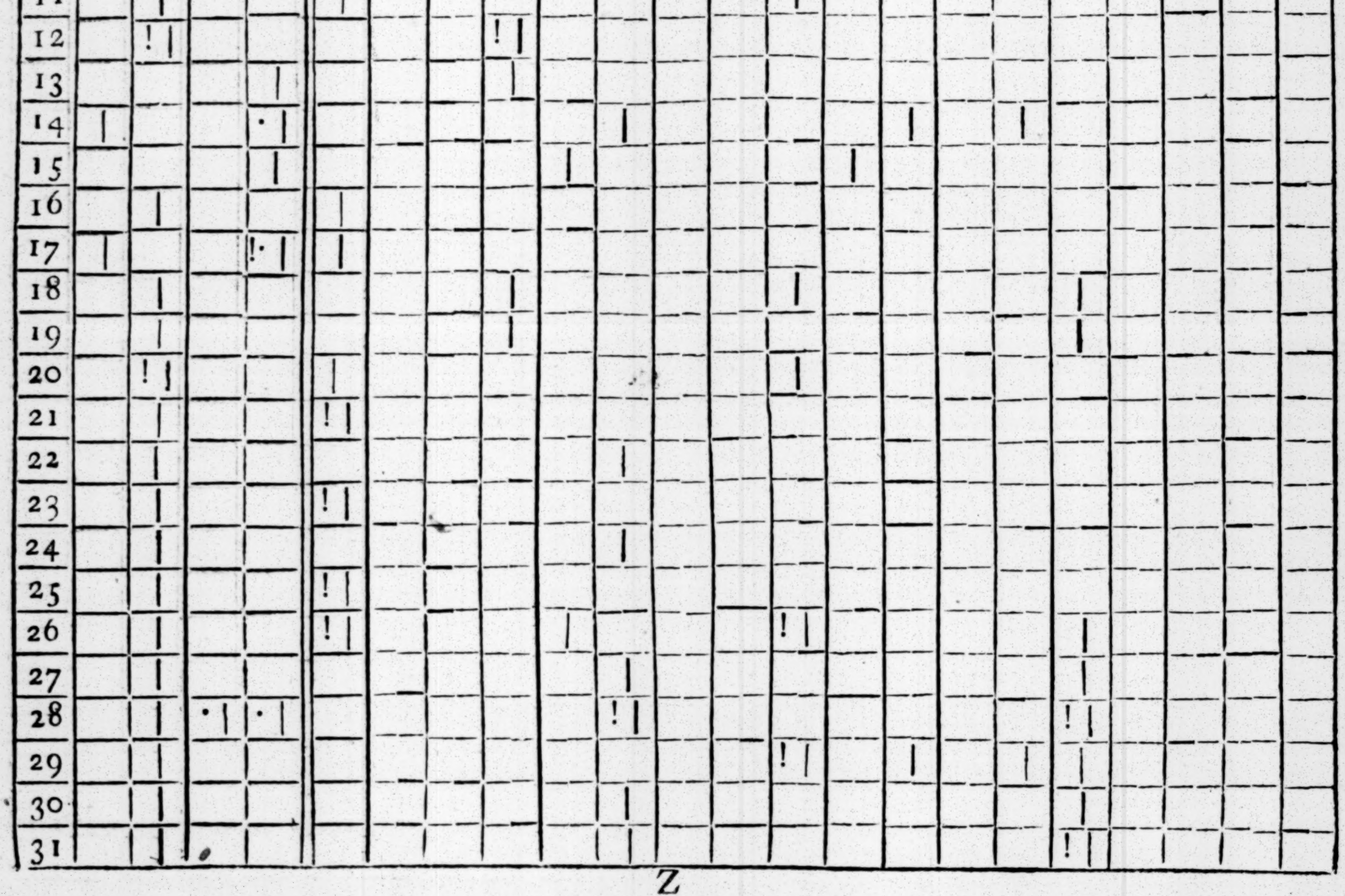
8th. WHERE *two* Points of Admiration are added to the Marks for the Weather, under whatever Title they are marked, they denote a very uncommon Extreme, and in *moſt* Caſes, diſtreſſing to the Farmer; as for Inſtance, from the 30th of *May* to the 22d of *June*, it was *exceedingly*

*ceedingly dry*. And on the 15th and 19th of *Auguſt* very *diſtreſſingly* wet.

Least it may be haſtily concluded by ſome Readers that the following Tables of the Weather, are not neceſſary to a Work of this Kind, it may not be improper to give my Reaſons why I think otherwiſe.

If theſe Tables of the State of the Weather ſhall be publiſhed for ſeven Years ſuppoſe; by the Farmers comparing the Weather of each Year one with another, he will ſee which are the dryeſt, and which the wetteſt Seaſons, he will ſee in what Point the Wind blows moſt, at certain Seaſons, and which Point of Wind brings moſt Rain, and conſequently conduct his Affairs accordingly. As for Inſtance, I find the Wind blows more from the Weſt in this Country than from any other Point, and that we have more Rain from that Point than any, nay, I believe than all the reſt, at leaſt I have found it ſo for two Years. Therefore I dread a Weſterly Wind in Winter and Harveſt, but in *May* and *June* often wiſh for it.—Hence I always protect my Harveſt as much as poſſible, when I obſerve the Wind incline to blow from the Weſt.

BRITISH MUSEUM 30 SEP 65



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|  | ⁚— | — | — | — | — |  | — | — | ⁚— | — |  | — | Weſt. |
|  |  |  |  |  |  |  |  |  |  |  |  |  | North. |
| — |  |  |  |  |  | — | ·— |  |  |  |  | ·— | South. |
|  |  | — | — |  | — |  | — | — |  | ⁚— |  | ⁚— | Fair. |
|  |  |  |  |  | — |  |  |  |  |  |  |  | Cloudy. |
|  |  |  |  |  |  |  |  |  | — |  |  |  | Hazy. |
| — | ⁚— |  |  | — |  | — |  |  |  |  |  |  | Showers. |
|  |  |  |  |  |  |  |  |  |  |  |  |  | Rain. |
|  |  |  |  |  |  |  |  |  |  |  |  |  | Rain immoderate |
|  |  |  |  |  |  | — | — |  |  |  |  |  | Warm. |
|  |  |  |  |  |  |  |  |  |  |  |  |  | Hot. |
|  |  | — | — |  |  |  |  |  |  |  |  |  | Cold. |
|  |  |  |  |  |  |  |  |  |  | — | — | — | Froſt. |
|  |  |  |  |  |  |  |  |  |  |  | — |  | Snow. |
|  |  |  |  |  |  |  |  |  |  |  |  |  | Dew remarkable |
|  |  |  |  |  |  |  |  |  |  |  | — |  | Sleet. |
|  |  |  |  |  |  |  |  |  | — |  |  |  | Storms. |
|  |  |  |  |  |  |  |  |  |  |  |  |  | Hail. |
|  |  |  |  |  |  |  |  |  |  |  |  |  | Very dry. |
|  |  |  |  |  |  |  |  |  |  |  |  |  | Thunder. |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |

30 SEP 65

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SEP 30

| FEBRUARY. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | |
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| Eaſt. | | | | | | | | | | | | | |
| Weſt. | — | — | — | — | — | — | — | — | — | | — | — | — |
| North. | | | | | | | | | | | ·— | | |
| South. | | ·— | | ·— | ·— | | | ·— | ·— | — | | ·— | |
| Fair. | ·— | | | — | | — | | | | — | | | — |
| Cloudy. | | | | | | | | | | | | | |
| Hazy. | | | | | | | | | | | | | |
| Showers. | | | | | — | | — | | | | | | |
| Rain. | | | | | | | | — | — | | — | — | |
| Rain immoderate | | — | — | | | | | | | | | | |
| Warm. | | | | | | | | | | | | | |
| Hot. | | | | | | | | | | | | | |
| Cold. | | | | | | | | — | | | | | |
| Froſt. | | | | | | | | | | — | | | |
| Snow. | | | ·— | | | | | | — | | | | |
| Dew remarkable | | | | | | | | | | | | | |
| Sleet. | | | | | | | | | | | | | |
| Storms. | | | | — | | | | — | — | | — | ·— | — |
| Hail. | | | | | | | | | | | | | |
| Very dry. | | | | | | | | | | | | | |
| Thunder. | | | | | | | | | | | | | |
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| 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | **March.** |
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|  | — | — | — | — | — |  |  | — | — | — |  | East. |
| — |  |  |  |  |  |  | — |  |  |  |  | Weſt. |
|  |  |  | ·<br>— | ·<br>— | ·<br>— | — | ·<br>— | ·<br>— |  |  | — | North. |
| ·<br>— | ·<br>— | ·<br>— | ·<br>— |  |  |  |  |  |  |  |  | South. |
| ·—<br>— | — | — | — | — | — | — | ·—<br>— | — | — | — | ·—<br>— | Fair. |
|  |  |  |  |  |  |  |  |  |  |  |  | Cloudy. |
|  |  |  |  |  |  |  |  |  |  |  |  | Hazy. |
|  |  |  |  |  |  |  |  |  |  |  |  | Showers. |
|  |  |  |  |  |  |  |  |  |  |  |  | Rain. |
|  |  |  |  |  |  |  |  |  |  |  |  | Rain immoderate |
|  |  |  |  |  |  |  |  |  |  |  |  | Warm. |
|  |  |  |  |  |  |  |  |  |  |  |  | Hot. |
|  | — | — | — | — | — | — |  |  |  |  |  | Cold. |
|  |  |  |  |  |  |  |  |  | — | — | — | Froſt. |
|  |  |  | — |  |  |  |  |  |  |  |  | Snow. |
|  |  |  |  |  |  |  |  |  |  |  |  | Dew remarkable |
|  |  |  |  |  |  |  |  |  |  |  |  | Sleet. |
|  |  |  |  |  |  |  |  |  |  |  |  | Storms. |
|  |  |  |  |  |  |  |  |  |  |  |  | Hail. |
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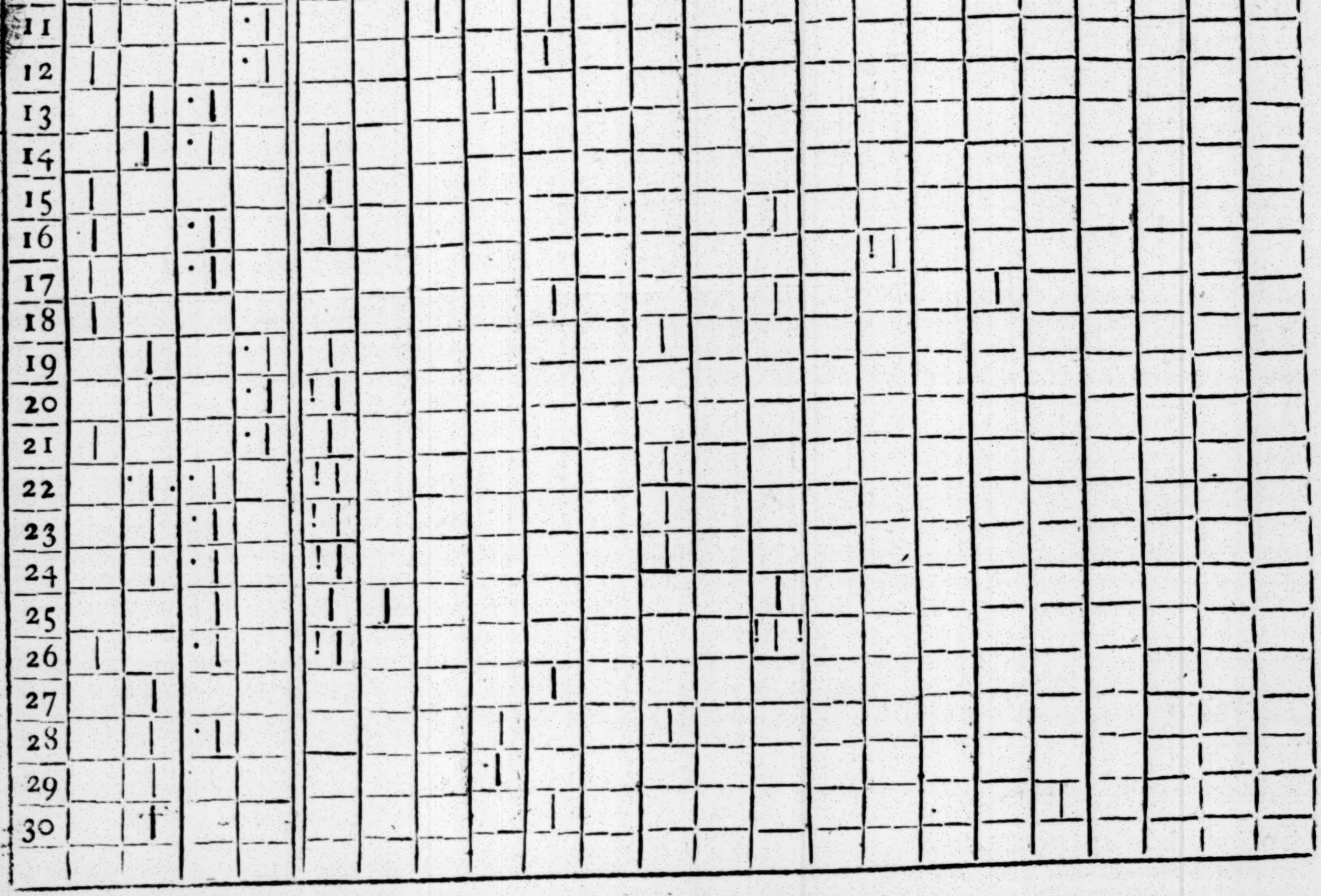

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| Rain immoderate |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| Dew remarkable |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Sleet. |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Storms. |  |  |  |  |  |  |  |  |  |  |  |  |  |
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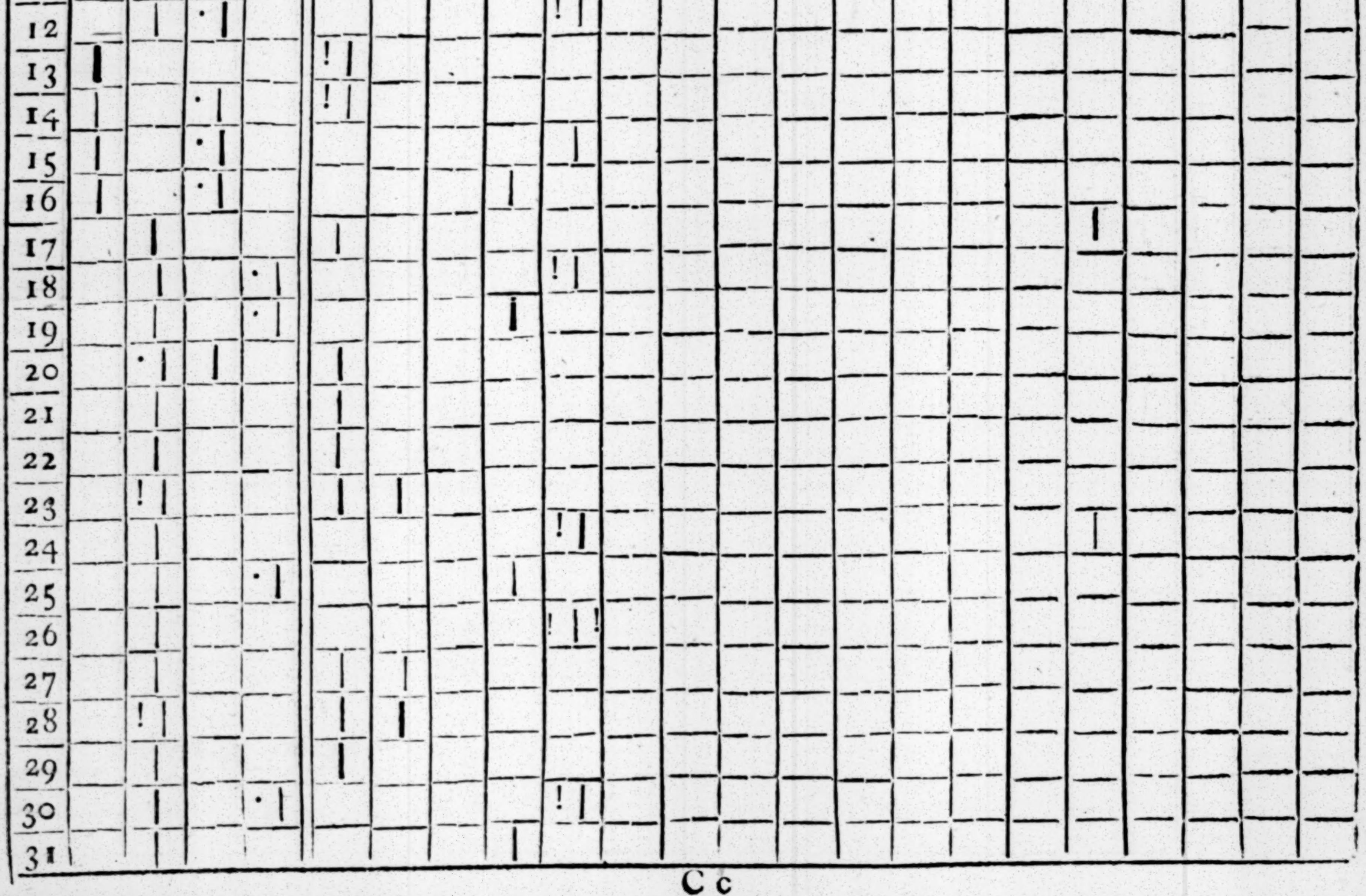
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| Rain immoderate | | | | | | | | | | | | | |
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| Dew remarkable | | | | | | | | | | | | | |
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SEP 30

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|  |  |  |  |  |  |  |  |  |  |  |  |  | Cloudy. |
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| — |  |  |  |  |  |  |  |  |  |  |  |  | Rain. |
|  |  | — |  |  | — |  |  |  |  |  |  |  | Rain immoderate |
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|  |  |  |  |  |  |  |  |  |  |  |  |  | Snow. |
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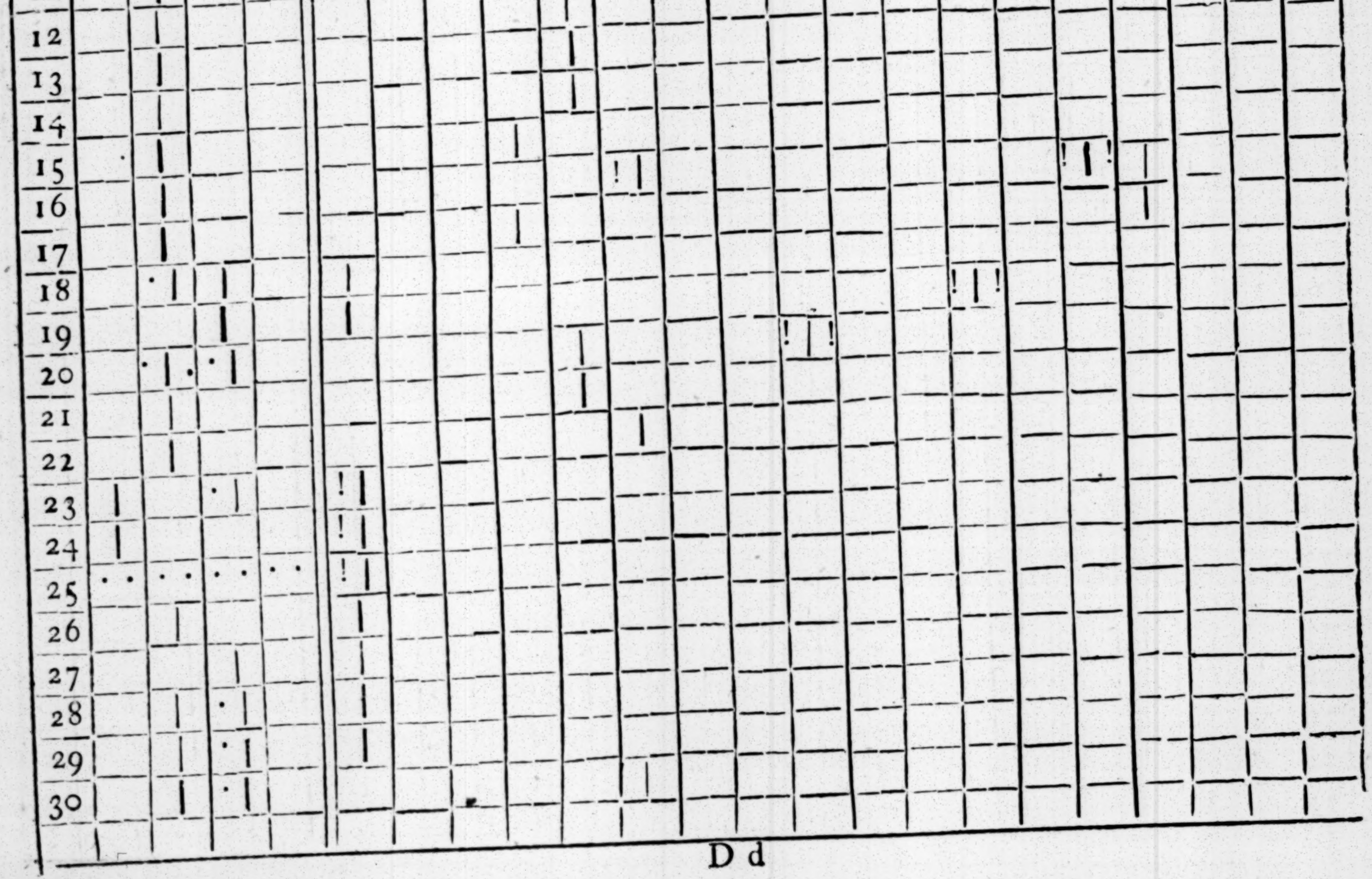
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| 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | SEPTEMBER. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  |  |  |  | — | — | — |  |  |  |  |  | : | East. |
| — | — | — |  |  |  |  |  |  |  |  | — | — | West. |
|  |  |  |  |  | ·<br>— | ·<br>— |  |  | — | — | ·<br>— | ·<br>— | North. |
|  |  | ·<br>— | — |  |  |  | — | — |  |  |  | : | South. |
|  |  | — | ·—<br>— |  | ·—<br>— | ·—<br>— | ·—<br>— | ·—<br>— |  |  | — | — | Fair. |
|  |  |  |  |  |  |  |  |  |  |  | — |  | Cloudy. |
|  |  |  |  |  |  |  |  |  |  |  |  | — | Hazy. |
|  |  |  |  |  |  |  |  |  |  |  |  |  | Showers. |
| — | — |  |  | ·—<br>— |  |  |  |  |  | — |  |  | Rain. |
|  |  |  |  |  |  |  |  |  |  |  |  |  | Rain immoderate |
|  |  |  |  |  |  |  |  | — |  |  |  |  | Warm. |
|  |  |  |  |  |  |  |  |  |  |  |  |  | Hot. |
|  |  |  |  |  |  |  |  |  |  |  | — |  | Cold. |
|  |  |  |  |  |  |  |  |  | — |  |  |  | Froſt. |
|  |  |  |  |  |  |  |  |  |  |  |  |  | Snow. |
|  |  |  |  |  |  |  |  |  | ·—<br>—<br>·— | ·—<br>— | — |  | Dew remarkable |
|  |  |  |  |  |  |  |  |  |  |  |  |  | Sleet. |
|  |  |  |  |  |  |  |  |  |  |  |  |  | Storms. |
|  |  |  |  |  |  |  |  |  |  |  |  |  | Hail. |
|  |  |  |  |  |  |  |  |  |  |  |  |  | Rain wanted. |
|  |  |  |  |  |  |  |  |  |  |  |  |  | Thunder. |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |

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30 SEP 65

| October. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
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| Eaſt. | | | | | | — | — | | | | | | |
| Weſt. | — | — | — | — | — | — | | — | — | — | — | — | |
| North. | | | | | | | | | | | | | — |
| South. | | | | | | | | | | | | | |
| Fair. | — | | | — | — | — | — | | | — | | | |
| Cloudy. | | | | | | | | | | | | | |
| Hazy. | | | | | | | | | | | | | |
| Showers. | | | — | | | | | | | | | | |
| Rain. | | — | | | | | | — | — | | — | | |
| Rain immoderate | | | | | | | | | | | | — | |
| Warm. | | | | | | | | | | | | | |
| Hot. | | | | | | | | | | | | | |
| Cold. | | | | | | | | | | — | | | — |
| Froſt. | | | | | | | | | | | | | |
| Snow. | | | | | | | | | | | | | |
| Dew remarkable | | | | | | | | | | | | | |
| Sleet. | | | | | | | | | | | | | |
| Storms. | | | | | | | | | | | | | |
| Hail. | | | | | | | | | | | | | |
| Rain wanted. | | | | | | | | | | | | | |
| Thunder. | | | | | | | | | | | | | |
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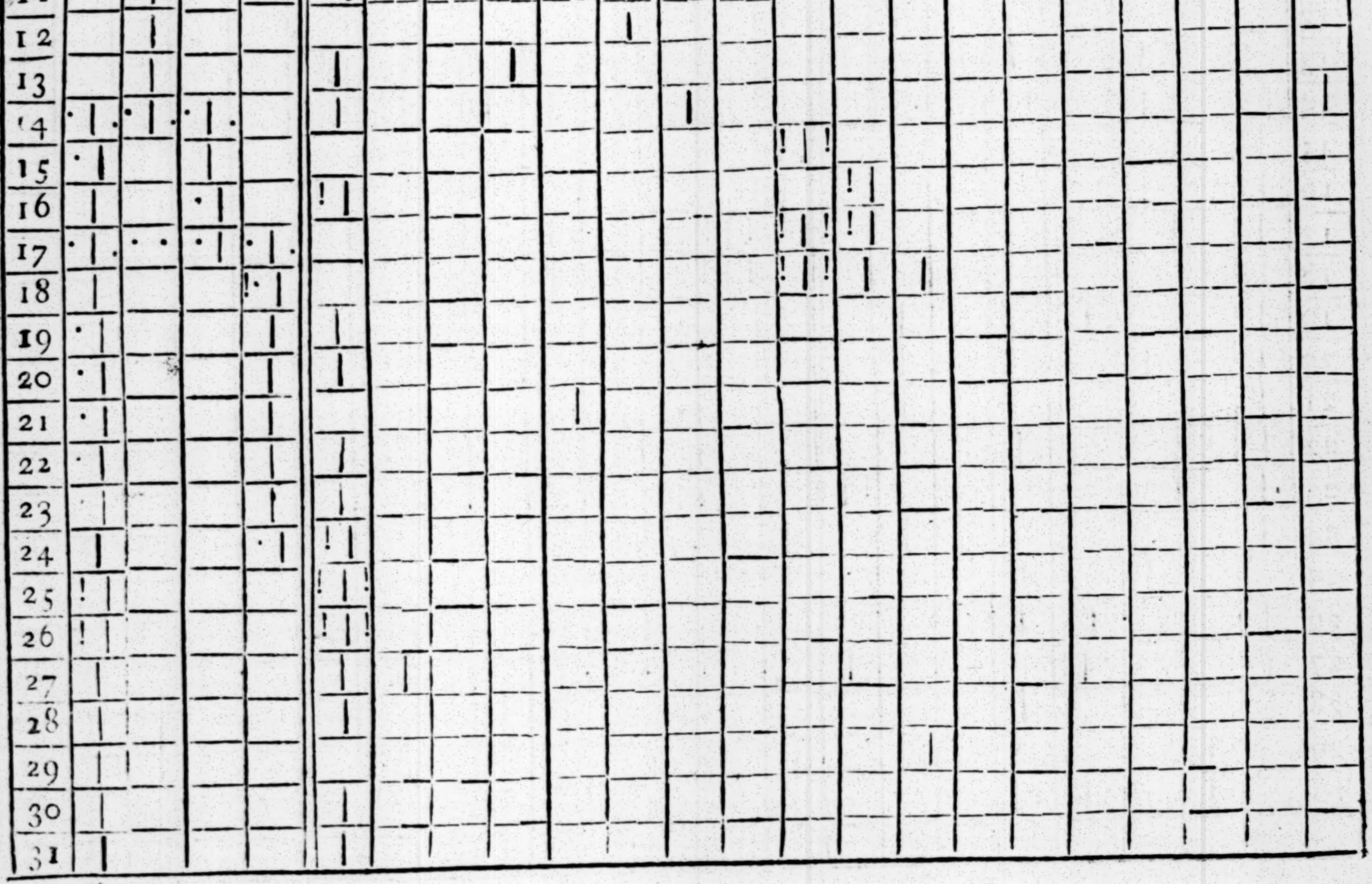
|  |  |  |  |  |  | ·<br>—<br>· |  |  |  |  |  |  |  | Eaſt. |
|  |  | — | — | — | — | ·<br>—<br>· | — | ·<br>— | ·<br>— | — | — | — | ·<br>— | Weſt. |
| — | — |  |  |  |  |  | ·<br>— | — |  |  |  | ·<br>— | ·<br>— | North. |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  | South. |
| ·—<br>— | — |  |  |  |  |  | ·—<br>— |  |  | — |  |  |  | Fair. |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  | Cloudy. |
|  |  |  |  |  |  |  |  |  |  |  |  | — |  | Hazy. |
|  |  |  |  |  |  |  |  |  | — |  |  |  | — | Showers. |
|  |  | ·—<br>—<br>·— | ·—<br>— |  |  |  |  |  |  |  | ·—<br>— |  |  | Rain. |
|  |  |  |  | ·—<br>—<br>·— | ·—<br>— | — |  | ·—<br>— |  |  |  |  |  | Rain immoderate |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  | Warm. |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  | Hot. |
| — | — |  |  |  |  |  |  |  | — |  |  |  |  | Cold. |
| — |  |  |  |  |  |  |  |  |  |  |  |  |  | Froſt. |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  | Snow. |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  | Dew remarkable |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  | Sleet. |
|  |  |  |  |  |  |  |  | ·—<br>—<br>·— |  |  |  |  |  | Storms. |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  | Hail. |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  | Rain wanted. |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  | Thunder. |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |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SEP 30 65

| 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | DECEMBER. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  |  |  |  |  |  |  |  |  |  |  |  |  | East. |
| — | — | — | ·<br>— | ·<br>— | — | — | ·<br>—<br>· | — | — |  |  | ·<br>— | West. |
|  |  |  | — | — |  | ·—<br>·<br>— | ·<br>— |  |  |  |  | — | North. |
|  |  |  |  |  |  |  |  |  |  | — | — |  | South. |
| — |  | ·—<br>— | ·—<br>— | ·—<br>— |  |  |  | — |  | ·—<br>— | ·—<br>— |  | Fair. |
|  |  |  |  |  |  |  |  |  |  |  |  |  | Cloudy. |
|  |  |  |  |  |  |  |  |  |  |  |  |  | Hazy. |
| — |  |  |  |  |  | — |  |  |  |  |  |  | Showers. |
|  |  | — |  |  |  |  |  |  | — |  |  | — | Rain. |
|  | — |  |  |  | — |  | — |  |  |  |  |  | Rain immoderate |
|  |  |  |  |  |  |  |  |  |  |  |  |  | Warm. |
|  |  |  |  |  |  |  |  |  |  |  |  |  | Hot. |
|  |  |  |  | — |  |  | ·—<br>—<br>·— | — |  |  |  |  | Cold. |
|  |  | — | — |  |  |  |  |  |  |  |  |  | Frost. |
|  |  |  |  |  |  |  |  |  |  |  |  |  | Snow. |
|  |  |  |  |  |  |  |  |  |  |  |  |  | Dew remarkable |
|  |  |  |  |  |  |  |  |  |  |  |  |  | Sleet. |
|  |  |  |  |  |  |  | — |  |  |  |  |  | Storms. |
|  |  |  |  |  |  |  |  |  |  |  |  |  | Hail. |
|  |  |  |  |  |  |  |  |  |  |  |  |  | Rain wanted. |
|  |  |  |  |  |  |  |  |  |  |  |  |  | Thunder. |
|  |  |  |  |  |  |  |  |  |  |  |  |  | Fog remarkable. |

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